Practical inquiry into the causes of the frequent failure of the operations of depression, and of the extraction of the cataract, as usually performed : with the description of a series of new and improved operations, by the practice of which, most of the causes of failure may be avoided, illustrated by tables of the comparative success of the new and old modes of practice / by Sir William Adams.

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In this Volume

① Practical Inquiry into the Causes of the frequent Failure of the Operations of Depression etc. London 1817

② Letter to the Directors of Greenwich Hospital on the Measures resorted to by the Medical Officers of the London Eye Infirmary for the purpose of retarding the Adoption & Execution of Plans for the Extermination of the Egyptian Ophthalmia etc

ROYAL LONDON
OPHTHALMIC
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ROYAL LONDON OPHTHALMIC HOSPITAL

PRACTICAL INQUIRY

INTO THE

CAUSES OF THE FREQUENT FAILURE

OF

The Operations of Depression,

AND OF

The Extraction of the Cataract, as usually Performed,

WITH THE DESCRIPTION OF A SERIES OF

NEW AND IMPROVED OPERATIONS,

BY THE PRACTICE OF WHICH, MOST OF THESE CAUSES OF FAILURE MAY BE AVOIDED.

ILLUSTRATED BY

TABLES OF THE COMPARATIVE SUCCESS

OF

The New and Old Modes of Practice.

BY

SIR WILLIAM ADAMS,

Member of the Royal College of Surgeons in London;
Oculist Extraordinary to His Royal Highness the Prince Regent;
Oculist in Ordinary to their Royal Highnesses the Dukes of Kent and Sussex;
Corresponding Member of the Société Philomathique of Paris;
——————— of the Academy Josephine of Vienna;
——————— of the Royal Academy of Physicians of Palermo;
And late Surgeon to the West of England Infirmary for curing Diseases of the Eye, instituted at Exeter.

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TO

THE RIGHT HONOURABLE AND HONOURABLE

THE

Directors of Greenwich Hospital.

My Lords and Gentlemen,

In thus publicly acknowledging my obligations to your Honourable Body, I am animated by those sentiments of gratitude, which the very flattering marks of your confidence in my professional experience, were well calculated to call forth.

That my anxious endeavours to restore sight to the many blind pensioners placed under my care should have been attended with success, and that my conduct should have been deemed deserving of the very honourable approbation you were pleased to confer upon it, have afforded me a degree of gratification which I cannot adequately express.

Not less gratifying, has been the subsequent testimony borne to the success of my new operations, by your publication of the "Official Papers," which most unexpectedly obtained for me, the distinction with which I have been honoured by His Royal Highness the Prince Regent—a distinction I shall ever acknowledge with the most grateful satisfaction.

You have, my Lords and Gentlemen, essentially advanced the interests of humanity, by promoting the restoration of sight to a number of our veteran defenders; and have thereby given an additional proof of the warm solicitude felt by your Honourable Body, to contribute by every means within your power, to the relief of those brave and deserving men confided to your charge, who have "fought and bled for their "country."

Were any incitement required, during the period of his arduous services, to animate the sailor's patriotism, and to ensure his good conduct, it would be found in the humane attention which is evinced, in providing for the comforts, supplying the wants, and allaying the infirmities of his old age, in that splendid establishment over which you preside—an establishment which does honour to the nation, and which excites sentiments of respect and admiration, in all those who have the opportunity of witnessing its internal management, and regulations.

You have, my Lords and Gentlemen, also served the cause of science, as well as of humanity, by presenting to the world, an ample and accurate Report, of the comparative success of the new and old operations, for the cure of the different species of cataract; and it will be seen, by the facts mentioned in the course of the present publication, how much such a statement was required.

With this public avowal of the obligations which I owe to your Honourable Body, justice demands that I

should combine the expression of my gratitude to Samuel Frederick Milford, Esq., Vice-President of the West of England Infirmary, at Exeter, for curing Diseases of the Eye. His commanding influence, and active humanity, quickly disconcerted the efforts of a professional combination to prevent the formation of that establishment, which I had the honour to propose; and also obtained for it, that patronage and support on the part of the Noblemen and Gentlemen of the West of England, the beneficial effects of which, will, I venture to hope, extend to succeeding generations.

In this institution, I devised, matured, and extensively practised, all those operations, (with only one exception,) which, by your command, I subsequently performed upon the pensioners of Greenwich Hospital.

To Mr. Milford also I am indebted, for having in an especial manner fixed my attention upon the principle, advanced by that great political economist, Adam Smith, namely, that "Men are much more "likely to discover easier and readier methods of at- "taining any object, when the whole attention of "their minds is directed towards that single object, "than when it is dissipated among a great variety "of things."

Lord Bacon, to whom the world is indebted for first laying down that system of education in science and philosophy, which has led to their present improved state, expresses himself to the same effect, when reasoning upon the diversity of pursuits among

the physicians of his day, and remarking upon their consequent incompetency. His words are, " That " it is not the insufficiency or incapacity of man's " mind, but it is the *remote standing* or *placing* " *thereof*, that breedeth these mazes and incom- " prehensions; for, as the sense afar off is full of " mistaking, but is exact *at hand*, so it is of the " understanding,—the remedy whereof is not to " quicken or strengthen the organ, but *to go nearer* " *to the object*."

The late Doctor Gregory, who was one of the most learned and eminent physicians of his day, observes, *in his work*, entitled, '*Duties and Qualifications of a Physician*,' " that a practitioner well grounded in " general knowledge, may have considerable advan- " tages, and more readily make improvements, by " attaching himself to the study of one or two parti- " cular diseases."

We have also the conclusive opinion of our immortal Sydenham upon this subject, who says,—*If only one physician in each century since the beginning of the world, had strictly confined himself to the treatment of only one disease, the healing art (which is justly the physician's province) would long since have attained to the highest point of perfection, that frail humanity at least may hope to accomplish* *.

---

* " Si vel unus tantùm persingula Mundi Secula hoc modo unicum tracta- " verit Morbum, Medendi Ars (quæ Medicorum est provincia) a multis retrò " Annis ad ακμὴν pervenissit, omnibus absóluta numeris, saltem in quan- " tùm fert mortalium sors."—SYDENH. *Præfat.*

In conformity with the principle, sustained by these great authorities, Mr. Milford urged the expediency of my secession from general practice, and the entire direction of my professional study to the diseases of the eye. He dwelt upon the great benefits society had experienced from Mr. Saunders, who, acting upon this principle, had been enabled to institute those investigations, which have placed ophthalmic surgery on a far more scientific basis than it had previously stood. Mr. Milford encouraged the hope, that, as I had originally commenced my professional studies under the same master, finished them at the same eminent schools, and had been so long the sole confidential pupil and assistant of Mr. Saunders, I might contribute towards the completion, of the necessary and important undertaking, which he had so successfully commenced. Influenced by these counsels and considerations, I abandoned the general practice of medicine and surgery, to which I had been regularly educated, and in which I was then extensively engaged; and I trust, that, in adopting Mr. Milford's advice, I have not altogether failed in accomplishing the object which he held out to my view.

Had I applied my time, to the varied and numerous avocations of general practice, it would have been impossible, in the comparatively short period during which I have confined my attention to ophthalmic diseases, to have devoted my thoughts with the intensity that was requisite, to devise and mature the different operations and modes of practice

which I have already published, as well as that which I am now about to lay before the public. And I hope, hereafter, to convince my professional brethren, that my attention has not been engrossed by those diseases of the eye upon which I have written, but that I have, with equal care and minuteness, investigated, with a view to improvement, all the other diseases of that organ which usually occur.

The advantages derived from a "division of labour," have been proved by experience, to extend also to the operative part of ophthalmic surgery. For it will be seen, in the following work, that the practice of general surgery tends materially, to lessen that lightness and delicacy of hand, which are essential to the success of the more important operations upon the eye. This indeed is evident from the frequent failure of operations for cataract, where it has been attempted to combine ophthalmic with general surgery, although the operations were performed by surgeons of acknowledged professional skill and eminence.

Allow me, my Lords and Gentlemen, to conclude with expressing my most grateful acknowledgments for your gracious permission to have this work dedicated to your Honourable Body.—"It is not," to use the dedicatory words of Mr. Locke, "that I "think any name, how great soever, set at the be- "ginning of a work, will be able to cover the faults "that are to be found in it. Things in print must "stand or fall by their own worth, or the reader's "fancy. But there being nothing more to be desired "for *truth* than a fair, unprejudiced hearing,"—

" and new opinions being always suspected, and " usually opposed, without any other reason, but " because they are not already common," nothing is more likely to procure to me that hearing, than the patronage of your Honourable Body, especially as that patronage evinces your favourable opinion of my professional principles and practice. In the anxious hope that I shall continue to deserve that opinion,

I have the honour to be,

My Lords and Gentlemen,

With the highest respect

and gratitude,

Your faithful and obedient servant,

WILLIAM ADAMS.

26, *Albemarle-street*,
Aug. 12, 1817.

PREFACE.

All the operations described in the present publication, have appeared in my work on Diseases of the Eye, except the new method of extraction, which has been matured since that book was written. I there described a particular mode of operating for the hard cataract of old persons, which I have now entirely laid aside, in favour of my more recent discovery.

This change in my practice, it may, perhaps, be said, indicates a vacillation of opinion, with respect to the superior degree of safety, which I contended in my former publication, to attend the removal of the cataract, (even in such cases,) by solution and absorption, rather than by the operations of depression and extraction.

To those who may entertain this opinion, I answer; that had I not devised the new mode of extraction, which I now present to the public, I should still have continued my former practice, notwithstanding the

great length of time, and the frequent repetition of the operation often required, rather than subject the patient to those fatal hazards, to which, as I have shewn in the present work, the two former operations for cataract are liable, even when performed by the most skilful operators.

Having, however, successfully established a mode of extraction, which, whilst it embraces the advantages of the usual method of performing that operation, is exempt from most of its accidents and causes of failure, humanity points out the propriety of adopting it, in order to save the patient, from the anxiety and pain to which he was necessarily subjected, when, from age, or the solidity of the cataract, frequently repeated operations were required for its removal.

With regard to the superiority of my operation for the removal of the soft cataract, my opinion remains unchanged; experience having convinced me, that it is attended with considerably less inconvenience and danger than any other mode in practice.

To expose the eye—an organ possessing

the utmost delicacy and sensibility, to unnecessary risk and violence, by performing an operation which merely possesses the advantage of at once removing the cataract, in preference to another, of a milder nature, and equally efficacious, though requiring to be repeated, would evince a degree of rashness, deservedly subjecting the operator to the censure of the profession, and to the distrust of the public—but, on the other hand, when those, who, from their professional knowledge and experience, have had opportunities of acquiring correct information, continue, from an obstinate adherence to former opinions, to practise and recommend, in publications and lectures, that operation which experience has sufficiently proved, not only requires to be repeated, too often ten or twelve times, but which not unfrequently subjects the patient to the most severe and dangerous inflammation, while, even when successfully accomplished to the full extent of the directions given, it leaves the eye in a very imperfect state for the general purposes of vision — they, by such conduct, evince a want of that proper feeling which all surgeons should possess, but more

especially those who undertake to teach others.

Although impressed most strongly with the sentiments of respect I have always entertained, for the eminent talents of my late friend and preceptor, Mr. Saunders, and gratefully sensible of the valuable professional information which he afforded me, I cannot consent to sacrifice my own judgment and experience, by unqualified assent to the accuracy of all his opinions. In the following publication I have confined myself to the consideration of the operation of Conradi just alluded to, the imperfections of which I have particularly felt it a duty to point out, in order to guard the profession against the specious encomiums which have been recently passed upon it, and which otherwise might continue, alike to mislead the inexperienced operator, and the public.

Had the valuable life of Mr. Saunders been spared, I am persuaded he would have very soon discovered the demerits and objections attendant on this operation, and, as his candour was equal to his judgment, that he would have promptly abandoned it,

as he had done other operations for cataract, which his experience had proved ineligible.

Mr. Saunders undoubtedly was unconscious, that the operation in question had been not only practised, but that a description of it was actually published in the English language some years before he adopted it*. The editor of his posthumous work, has therefore undeservedly subjected his author to the imputation of plagiarism, by not noticing this circumstance.

The works which have heretofore appeared upon cataract, have in general been written for the exclusive purpose of recommending a particular operation; and it has been truly remarked, that too frequently the more favourable side alone of the subject, has been exposed to public view.

That a very incorrect opinion is generally entertained of the average success of the operation of depression, but more especially of that of extraction, I am confident. The public have been so long taught to believe that the patient had only to submit to the latter operation in order to recover his sight,

* See the article Cataract, in Rees's Encyclopedia.

that it becomes highly necessary, to remove the veil under which the truth has in this country hitherto been concealed.

I have therefore endeavoured fully and candidly to lay open the causes of failure in both these operations, and to shew how the evils attendant upon them may be avoided. I have collected the opinions of some of the most eminent surgeons in confirmation of the accuracy of my own; and have added tables, which appear clearly to establish the comparative success, of the different operations for cataract. By these means, I conceive the profession and the public, will now be enabled to judge for themselves; and I trust that the minds of those afflicted with cataract, will no longer be agitated by the conflicting and opposite opinions, which necessarily resulted from the contradictory accounts, heretofore given of the merits of the different operations, by their respective advocates.

TABLE OF CONTENTS.

Page.

DEDICATION iii

PREFACE xi

CHAP. I.—SECT. 1.

Page.

OPINIONS of the ancients respecting the nature and seat of cataract .....1—3

Cataract, simple and compound 4

Seat of cataract 5

Applications employed by the ancients to effect a dilatation of the pupil previously to the performance of couching 6

Opacity of the posterior part of the capsule sometimes mistaken by the most experienced oculists for gutta serena .....7—8

Different species of cataract ..... 8—9

Travers, Mr., erroneous opinion of, as to seat of posterior capsular cataract—adopted the exploded opinion of Maitre Jan.....10—11

Richter, Janin, Scarpa, De Wenzel, Ware, and De Gravers, are of opinion that there is a capsula propria .....12—17

Zinn's opinion contrasted with that of Mr. Travers.... 21

Page.
Dark cataracts sometimes mistaken for gutta serena .. 24
Two cases of dark cataract, successfully operated upon, which had been pronounced gutta serena 25
Scarpa denies the possibility of determining, before operation, the consistence of cataract 26
Cause of cataract frequently unknown..... 27—28
Accidents produce it 29
Cataracts instantaneously produced by sudden violence 30
Frequency of cataracts in old persons attempted to be explained 31
Elastic, tremulous, encysted, or hydatid, cataracts.. 32—33
Secondary cataract 34
Cataract, complicated with other diseases 34
Symptoms of approaching cataract ..... 34—35
Period required for the formation of cataract..... 37—38
Instances of hereditary cataract 39
Instances, where several brothers and sisters have been affected with cataract, at birth, and subsequently 39—40
Syphilis, a cause of cataract 41
Idiopathic inflammation of the iris, and the chronic stage of the Egyptian ophthalmia, produce capsular cataract 43
Scrophula not considered a predisposing cause 44
Internal and external remedies, incapable of removing cataract, frequently injure the health of the patient 45—46
The crystalline lens less within the circulation than any other part 47
Solution necessary for the absorption of a solid body.. 48
Circumstances to be considered preparatory to operation 58
Opacity confined to the posterior part of the lens; the anterior part being transparent 59

Page.

Retina becomes diseased in its functions from want of use, and cataract is sometimes mistaken thence for gutta serena 60

Dagnostic signs, to warrant the performance of an operation 62

CHAP. II.—*Depression.*

History and nature of 65

Celsus first described the operation..... 68

The native Indians perform it 69

Their operation described by Dr. Scott 71

Depression in disrepute until revived by Pott, about 1775 75

Pott first demonstrated the solution of the lens by the humours of the eye 75

Scarpa abandoned extraction for depression 76

The operation of depression described 78

The author's objections to depression 81

Wenzel's objections to depression..... 82

Cataract may return by reascension 87

Cataract is propelled by the elasticity of the vitreous body 88

Mr. Gibson's opinion of the cause of reascension.... 91

Cases of reascension ..... 94—98

Reascension, in three instances, under Professor Scarpa, as attested by Mr. Este..... 97

Scarpa's practice described 98

Capsule of the lens cannot always be opened 102

Cataracts found undissolved at the bottom of the eye, thirteen, and seventeen years, after depression..... 104

The retina found ulcerated from the pressure of a depressed cataract 108

Page.
Gutta serena a frequent consequence of depression, 107—112
Destruction of the eye sometimes produced by depression 113

CHAP. III.—Sect. 1.—*Extraction.*

History and nature of 116
Pliny mentions this operation 117
Rhasis and Avicenna, in the 8th century, mention it .. 117
Daviel revived it, 1752 119
Description of the operation, ... 120
Extraction of lens, according to the author's mode, after placing it in the anterior chamber 126
The steps of this operation recorded in the hospital books of Greenwich in 1814 129
Mr. Travers subsequently claimed the principle of the new operation as his invention..... 131
An operation somewhat similar had been performed by St. Yves in 1707 132
This operation attended with peculiar advantages—exempts the patient from many dangers 137
Description of the author's method of performing it 138
No one operation equally applicable to all the different species of cataract 142
The removal of cataract by solution and absorption to be preferred to every other mode, when the case admits of it 143

CHAP. III.—Sect. 2.

Cases to which extraction is ill adapted, or wholly inapplicable, with a description of the author's practice, by which the causes of failure of the former operation may be avoided 146

Page.

Inapplicability of the usual operation of extraction in children—and persons, either infants or adults, born with cataract 146
Its inapplicability to capsular or secondary cataract.. 150
Its inapplicability to fluid cataract 155
Dangers attendant on extraction of capsular, adherent capsular, and fluid cataract, are obviated by the new operation practised by the author..... 156
This new operation as seldom fails in capsular cataract, as in other species of the disease 160
The inapplicability of the usual mode of extraction to capsular opacity with a transparent lens 162
As also to capsular opacity with an opaque lens 167
Dangers avoided by the new operations in this species of cataract 170
Its inapplicability to elastic cataract 175
Its inapplicability to cases of flat cornea and convex iris..... 178
————————to cases of small sunken eye, 183—320
————————to cases of spasm of muscles of the eye during the operation, 186—321
————————to cases of large pupil with small lens ..... 191—323
————————to cases of large lens with small pupil ..... 195—324
————————to cases of cystic or hydatid cataract ..... 201—326
————————to cases of fluid vitreous humour 205—327
Advantages of an horizontal position in the operation of extraction 211

CHAP. III.—Sect. 3.

Page.

Case in which the usual operation of extracting the cataract may be considered most advisable;—dangers to which such operation, even in this case, is liable; which dangers may be avoided by the new operations described in the preceding section 215

One cause of its failure 229

Second do. do. 230

Third do. do. 233

Fourth do. do. 234

Fifth do. do. 235

Sixth do. do. 236

Seventh do. do. 237

Pressure upon the eye-ball in order to extract the cataract is a frequent cause of failure in the usual operation of extraction. This cause is avoided by the author's method ..... 242—246

Fragments to be removed by scoop 245

Vertical section of the cornea recommended 249

Gutta serena not unfrequently results from the usual mode of extraction, but has not occurred in any case from the author's method ..... 252—253

CHAP. IV.—Sect. 1.

Analysis of the author's new operations 254

Operation for solid cataract, in children and adults, extensively applicable, and successful.—Its steps described 255

Description of the author's needle for this operation 256

Imperfection of needles previously employed..... 257

Page.
Superiority of sharp-cutting over blunt needle 258
Second step of operation 260
Operation for capsular cataract 264
————for adherent capsular cataract 265
————for adherent lenticular cataract..... 266
The author's mode of dividing the iris, to form artificial pupil 269
Causes of the failure of Cheselden's operation..... 273
Important improvements in the author's method of performing it..... 274
The author's iris scalpel 274
Cheselden's operation for dividing the iris rejected by the most celebrated surgeons and oculists 276
The operation for artificial pupil had fallen into general disrepute; redeemed by the author's improved method of performing it 277
In thirteen pensioners of Greenwich Hospital operated upon for artificial pupil, by the author, not a single case of failure occured 280
The author's practice for artificial pupil equally successful upon private patients 280
Great delicacy and dexterity of hand requisite for this operation 281
Analysis of the author's new operation for extraction, 283
Extraction not to be attempted while there is protrusion of the iris 287

CHAP. IV.—Sect. 2.

Summary and General Observations 289
Distinction to be made between the terms, depression and absorbent practice 293

Page.

The aqueous humour more powerfully solvent than the vitreous,—this circumstance an argument for placing the cataract in the anterior chamber 295

Pott, Scarpa, Hey, and other eminent surgeons, declare that the fragments of the lens, when placed in the anterior chamber, do not excite inflammation or irritation 298

Scarpa's operation for capsular cataract 299

The author differs with Scarpa, and describes his own method of operating in such cases 300

Second objection to depression—the probable reascension of the cataract from the elastic power of the vitreous humour 301

This liability noticed by the most respectable authors, ancient and modern 302

Case of a large portion of lens reascending after depression, adduced from Scarpa's work on diseases of the eye, which required a repetition of the operation.—Three instances of such occurrence witnessed by Mr. Este, while studying under the Professor at Pavia 303

Third objection to depression—gutta serena from the pressure and friction of the lens upon the retina ..... 97—308

In nearly three hundred eyes of children and persons born with cataract, operated upon by the author, only two eyes were lost by suppuration 310

This class of patients the most desirable for the absorbent practice 310

Capsular or secondary cataract ill suited for this practice 311

Dangers in such cases are avoided by the author's modes of practice 313

Page.

In thirty cases lately operated upon, of capsular cataract, by the author, not one eye was lost..... 315
Capsular opacity with a transparent lens also admits of the absorbent practice 316
The author's method has not failed, in any instance, in the cure of elastic cataract 319
Cases where the old operation for extraction may be employed 330
Even in those cases, dangers and accidents occur, as admitted by *Richter*, *Wenzel*, *Ware*, *Bischoff*, and *Wathen* 330
Those dangers are avoided by the new operations 332
Protrusion of the iris, a frequent cause of failure in the usual operation 335
Danger from pressure upon the eye-ball 336
Different modes of making the section of the cornea, to prevent accident.—*Daviel's*, objected to by *Richter*, on account of its great extent.—*Ware's* method.—*Wenzel* in certain cases advises section in the upper part of the cornea.—*Wardrop's* mode ..... 337—339
Gutta serena never produced, when the rules recommended by the author are observed 343
Extraction may be followed by inflammation—by protrusions of the vitreous humour, and iris—by opacity of the capsule, or secondary cataract,—by opacity of the cornea,—and by ulceration or sloughing of the cornea.....345—348
These sources of failure are in no respect dependent on the skill or dexterity of the operator 349
Prior to Mr. Pott's time, fluid and soft cataract were considered to be incurable by the needle 350
Enquiry whether the three great advocates for depression—Pott—Hey and Scarpa, have availed themselves

Page.

of the superior solvent powers of the aqueous to the vitreous humour, as much as they might have done—and whether their needles are well constructed for the absorbent practice ..... 351—353

Construction of the author's needle—and his mode of conducting the absorbent practice which precludes the necessity of frequently repeating the operation..354—357

Reasons for condemning *Conradi's* operation—Case of John Mercer, corroborating the author's opinion, and mode of practice .....357—359

Iron soluble in the aqueous humour of the eye 362

The absorbent practice, not liable to the objections attendant on the operations of depression and extraction,—combines the advantages of both..... 365

Enquiry whether employment of the needle, or pressure upon the ball, is preferable, in extracting the cataract 368

Inflammation rarely follows the use of the author's needle 371

Any pressure on the eye-ball, during extraction, occasions considerable danger 372

CHAP. IV.—Sect. 2.

Opinions of authors, respecting depression and extraction 373

Unfavourable opinions entertained of depression, by Hovius,—Professor Raw,—Heister,—and Mr. Sharp .....374—376

Unfavourable opinions entertained of extraction, by Mr. Pott,—Benjamin Bell,—Dr. Young,—Warner,—Gooch,—Lucas,—Mr. Sharp,—and Professor Scarpa .....376—383

Page.

Baron Wenzel altered his opinion latterly in favour of solution and absorption, instead of extraction of cataract..... 383

Mr. Ware changed his opinion and practice, after witnessing the author's mode of operating 384

Richter became a convert to the absorbent practice... 386

Thus the three great champions for extraction ultimately became converts to the absorbent practice 387

CHAP. IV.—Sect. 3.

Comparative success of the different operations for cataract; result of *Daviel's* operations 389

Result of experiments in Paris, to determine between depression and extraction.....391—392

Lacournère's opinion..... 392

Result of *Monsieur Roux's* operations..... 393

Nine cases in London, operated upon by extraction, all failed 393

Of twenty-four cases on Greenwich pensioners operated upon, before the author's appointment to operate at Greenwich Hospital, twenty-three failed 395

In one hundred and thirteen operations performed at the Hôtel Dieu, at Paris, *seventy* by extraction, and *forty-three* by depression, only *nineteen* of the former, and *twenty-four* of the latter, were perfectly successful—Table 396

The author operated upon forty cases in succession at Exeter, without a single failure 399

Of thirty-one Greenwich pensioners, operated upon by the author, twenty-nine cases succeeded; one man was discharged for irregularity, and one case failed 401

Page.

Monsieur Roux, in 1813, operated upon fifty-eight cases of cataract, and acknowledged publicly to the author he had failed in half the number 404

Two out of five the average number cured in France by the operations for cataract 404

The operations considered in France very successful, when half the number recover their sight 404

Wenzel's success contrasted with that of an eminent Parisian operator 405

Roux confounds the regular surgeon of the present day, who confines his practice to ophthalmic surgery, with the ignorant oculist of former times 408

Natural qualifications are requisite to form a good operator for diseases of the eye 410

The author's invariable practice to invite the most respectable members of the profession to witness his operations 410

The author's operations, recommended in the lectures of some of the most eminent teachers of surgery in London, and favourably considered in different parts of the continent 410

ON CATARACT.

CHAPTER I.

Sect. 1.

THE term Cataract is of Greek derivation, and signifies an opacity either of the crystalline lens, its capsule, or the interstitial fluid, contained between the lens, and capsule, which is called the Humour Morgagni, it having been first discovered by the eminent anatomist of that name. Cataract may exist in any of these parts separately, or they may all at the same time be opaque.

The ancients entertained very erroneous opinions concerning this disease; for although, within the first century of the Christian era, cataract was known, and the means for its removal mentioned by Celsus, and Pliny, yet its true nature, and seat, were not ascertained until modern times*.

* Celsus was born in the thirty-seventh, and Pliny in the seventy-eighth year of the Christian era.

It was generally supposed, that the cataract was produced, either by an accumulation of thickened humour, coagulated, and hardened, by degrees, in the middle of the aqueous humour, or by an adventitious membrane, situated in the anterior or posterior chamber of the eye. Some believed it to be an opacity of the internal surface of the cornea; others thought the cataract was seated in the vitreous humour. Even gutta serena was mistaken for the disease in question, when it was called black cataract. Staphyloma, as well as opacity of the cornea, was also called cataract. It appears as if every part, excepting that, where the disease really existed, was supposed to be the seat of cataract, no one suspecting it to be situated in the crystalline lens, which was considered the immediate organ of vision. From the general prevalence of the latter opinion, it is not surprising that the disease should be attributed to any, rather than the right cause; and, as the ancients were in the habit of removing cataracts by operation, they necessarily imagined the cure was owing to the dislodgement of some other part, rather than that, in which they believed vision to reside.

Kepler, the celebrated astronomer, in 1604 is said to have first subverted these erroneous opinions, by shewing the transparency of the crystalline lens, and that it was destined to collect the rays of light upon the retina, the true seat of vision. This discovery was confirmed by François Quarré, a learned physician and surgeon; and also by Remi Lesnier, in a thesis read at the schools of surgery, about the middle of the seventeeth century. Shortly afterwards, Borel, Bonnet, Blégny, Lucas, Tozzé, Pollisinus, Bernard, Rohaut, and Gassendi, demonstrated, that the cataract is almost always the result of an opacity of the crystalline lens, and of its change of colour. This opinion, which was subsequently abandoned, was again revived in the beginning of the eighteenth century, when Brisseau, Maître-Jan, Boerhaave, Mery, Heister, and others, established beyond contradiction, that the cataract consisted of an opacity of the crystalline lens, and was not produced by the formation of any substanoe or membrane, in either of the chambers of the eye*. In 1722, Morand, demonstrated to the Academy of Sciences, the mem-

* Brisseau appears to have been the first, who gave the name of chambers, to those two cavities which contain the aqueous humour.

branous cataract, or that which is confined to the anterior and posterior parts, of the capsule of the crystalline lens.

Cataract is divided into the simple, and the compound. The simple consists, first, in an opacity of the crystalline lens itself, called lenticular cataract; secondly, in an opacity of the capsule, termed capsular cataract; thirdly, in an opacity of the humour morgagni, called interstitial cataract. The compound cataract is formed by an opacity of any two of the before-mentioned parts, or of the whole of them together. The capsule and lens are however much more frequently occupied by disease, than the humour morgagni.

The consistence, seat, and colour of cataract are very different, forming different species of that disease. It is frequently quite fluid, like milk; and is found differing in degrees of consistence, from the very soft, to hard, and even bony. I have repeatedly met with partial depositions of calcareous matter in the capsule of the lens; and I once saw my late friend Mr. Saunders, in making an artificial pupil, extract a lens, which was entirely converted into bone. This phenomenon has been noticed by different authors.

When the lenticular cataract is said to be fully formed, the crystalline is most commonly of an uniform degree of opacity, throughout its whole substance. There are, however, exceptions to this as a general rule: for, in addition to the varieties already noticed, it is not unfrequent, that persons born with an opacity of the centre of the crystalline, have the edge transparent all around the circumference, for nearly one-fourth of its diameter. In one instance (the only one certainly of the kind I have ever seen or heard of) I found the posterior part of the body of the lens opake, while its anterior part was quite transparent. In general, the circumference and external part of the lens, are not as opake as the centre; but this circumstance may, I believe, be attributed in a great degree to the difference of structure, the centre, or nucleus, being of much greater solidity, and much thicker in substance, than the other parts of that body.

Capsular cataract may exist, either in the anterior, or posterior parts of the capsule of the crystalline lens: in the former it assumes a slightly convex, in the latter a concave form. Frequently, both the anterior, and posterior parts, are opake, when the latter is necessarily concealed, by the opacity

of the former. Sometimes the opacity is partial, and of no great extent: vision, in such cases, is not much injured.

The opacity of the anterior part of the capsule can at all times be easily distinguished; but the posterior opacity is not easily detected, and has been known to elude the careful examination of several very experienced oculists, by whom it has been mistaken for gutta serena; and, although this species of cataract is mentioned by authors, it may be doubted whether they were, in reality, practically, aware of its existence. Indeed, without the assistance of the belladonna, or some other application capable of dilating the pupil, which class of applications were known to the ancient writers, but have been revived* only within these

* I say "revived," for the ancients employed medicines to dilate the pupil previously to the performance of the operation for cataract. Pliny, after speaking of the herb pimpernell, or anagallis, says "Pupillas dilatat et ideo hoc inunguntur ante, quibus paracentesis "sit."—See C. Plinii, *Natur. Histor.* lib. 25. cap. 13.

Holland, the translator of Pliny, gives this passage in the following words:—"The same medicine (pimpernell) like-"wise is good for to dilate the tunicles that make the ball or "apple of the eye, and therefore it is an ordinarie course that "their eyes be anointed therewith before-hand, who are to be "pricked with a needle for couching of a cataract."—See Holland's *Translation of Pliny's Natural History*, Vol. i. book 25, chap. 1, p. 234.

few years, it is difficult, and sometimes impossible, to distinguish it. Richter, Wenzel, and Scarpa, who have written so largely upon cataract, and have published cases of its varieties on which they have operated, have not recorded any instance of this remarkable species: in which the posterior part of the capsule is alone affected with opacity, while the anterior part of that membrane, and the crystalline lens, remain perfectly transparent. In this country, at least, there is reason to believe, that it was practically, very little known, previous to the publication of my work on Cataract, &c., in 1812*, in which a case of this kind is detailed at length, in a gentleman who had been blind eighteen years, seven of which he had been under the care of an eminent and experienced oculist, who considered and treated the disease as Gutta Serena. About the period of my curing this patient in both eyes, I also successfully operated upon one eye of another patient, who told me, that, during several years,

* The first case of this kind, which fell under my notice, was that of a lady of Falmouth, who consulted me at Exeter, the beginning of 1810, and on whom I successfully operated in the spring of last year.

he had consulted the most eminent professional practitioners in the metropolis, all of whom concurred in opinion, that he laboured under Gutta Serena. Other instances of a similar nature have occurred since my coming to settle in London.

I have been thus particular in describing this opacity, and in relating these important facts, from an anxious wish to impress upon the minds of my professional readers, the much more frequent existence of this remarkable species of cataract, than they might be led to suspect, from its having been so little noticed; and because, from its near resemblance to gutta serena, (particularly to that species described by Scarpa, as the most hopeless*,) it is liable to be mistaken for an incurable disease of the eye.

* "The retina of a sound eye is transparent, and therefore, in "any degree of dilatation of the pupil, the bottom of the eye is "of a deep black colour. This unusual pallor then which ac- "companies the amaurosis (gutta serena) indicates that a "considerable change has taken place, in the substance of the "optic nerve forming the retina, which, according to all ap- "pearance, is become thickened, and rendered permanently in- "capable of transmitting the impression of light. This sign, "therefore, is one of the most unfavourable."—Professor Scarpa's *Practical Treatise on Diseases of the Eye*, p. 482.

In a paper which appeared in the Medico-Chirurgical Transactions, twelve months after the publication of my work on Diseases of the Eye, (in which this species of cataract is particularly noticed,) Mr. Travers gives it as his opinion, that the opacity is situated in the posterior duplicature of the *vitreous capsule*, instead of the *capsula propria* of the crystalline lens, where I described it to be seated, as will be seen by the following passages :—

"From syphilitic inflammation, and from other "causes, the capsule of the crystalline becomes "opaque, thereby producing partial, or total "blindness, while the lens continues perfectly "transparent, and free from disease. The opacity "may be confined, either to the anterior, or the "posterior part of the capsule; or it may extend "to both. When the opacity is in the anterior "part of the membrane, it is easily discernible; "and it generally exists with an adhesion to the "iris; but, if the posterior part alone of the "capsule is the seat of disease, it is with more "difficulty ascertained, and it will often require a "strong light to fall on the eye, after the pupil "has been previously dilated by the belladonna,

" before its exact situation and extent can be seen."
" Again, " I am induced thus particularly to
" point out the latter species of the disease,
" because, as far as I have been able to learn,
" it has not been specifically noticed by any
" writer on the subject of cataract, *and I have*
" *recently seen several instances where it had been*
" *pronounced Amaurosis, by many of the most*
" *experienced oculists**."

Mr. Travers gives his opinion of the seat of this opacity in the following words:—" The opacity is
" sometimes much deeper seated, so that you look
" at it through the transparent capsule and lens.
" It is here generally circumscribed, but irregularly
" shaped; and *often, from its tenuity and depth of*
" *situation, escapes the observation even of oculists.*
" I do not find, upon repeated and strict exami-
" nation, any proper capsule investing the lens,
" *i. e.* which admits of being removed with it.
" The tunic of the vitreous humour advances to
" the ciliary body: there it separates into two la-
" minæ, which, when contiguous to the margin of

* See the description for the " Operation for Capsular Opacity " with a transparent Lens," in my work published in August, 1812; and also Case 43, in which the operation was successfully performed in April, 1812.

" the crystalline, adhere closely to each other, " forming the sacculated circle (canal godronné) " described by Petit, which is capable of being " inflated round the margin of the lens." " The " anterior lamina, which is the more dense of " the two, covers the crystalline in front; the " posterior lines the fossula of the vitreous " humour." " The crystalline, it will appear from " this description, is incased in a duplicature of " the vitreous capsule. The posterior opacity " before described is therefore seated in the " proper tunic of the vitreous humour*."

It will be seen that Mr. Travers has here adopted the exploded opinion of Maître-Jan, who remarks " Qu'il (le cristallin) est situé au " milieu de la partie antérieure du corps vitré, " vis-à-vis le trou de l'uvée: qu'il est retenu " fermement en ce lieu par la membrane du corps " vitré, que comme je l'ai déjà dit, se divise en " deux membranes, dont l'une continue à en- " vironner la partie antérieure du corps vitré, " et l'autre passe par-dessus le crystallin, et

* See a paper, by Benjamin Travers, Esq. senior Surgeon of the London Eye Infirmary, read before the Society for promoting Medical and Chirurgical Knowledge, July 8th, 1813.

" l'embrasse de telle sorte, qu'il ne peut changer " de situation*."

As this description by Maître-Jan, of the manner in which the investing membrane of the crystalline lens is formed, constitutes a prominent error in the anatomy of the eye, which, it will be hereafter seen, is of great importance in a practical point of view, I trust that I shall be excused for dwelling upon the subject, in order to quote the following eminent authorities, in direct opposition to his opinion; these, together with some further facts and reasoning, founded upon my own observation, will incontestably demonstrate the existence of a proper capsule investing the lens; and this I think it my duty to explain, in order to prevent the extent, to which this erroneous doctrine might otherwise become disseminated, in consequence of its Revivor being at the head of an institution, where diseases of the eye are publicly taught.

Richter, in his work on the subject of concreted cataract, says :—" All that can be done, in order to

* Traité des Maladies de l'Œil, par Maître-Jan, p. 40, also p. 33.

" 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, the " lenses came out unexpectedly, enveloped in their " capsules, without any bad symptoms following*. " Mr. Janin has proved, by many and repeated ex- " periments, 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 pro- " cesses by means of blunt instruments only: " nor after its separation does it shew any lace- " ration, or any other mark by which one might " be led to conceive, that it had firmly adhered to " the membrana hyloidea†."

Janin himself observes, that " La difficulté de " séparer complétement la crystalloïde posté- " rieure de la hyaloïde, dépend de la ténuité de

* He also says,—" I have two lenses in my possession, which " I extracted, and which are both covered with their entire " capsules."—RICHTER, p. 64.

† English translation of Richter on Cataract, p. 95, 96.

" ces membranes, et non de leurs moyens d'union,
" qui sont très-faibles ; il paraît que quelquefois
" une secousse imprimée au globe de l'œil, a suffi
" pour rompre ces adhérences, qui se détruisent
" aussi quelquefois dans la cataracte*."

Professor Scarpa says, " Anatomy teaches us
" that there are remarkable differences, in several
" respects, between the anterior and posterior
" portions of the capsule of the crystalline lens.
" One of the principal differences is, that the
" anterior convexity of this *membraneous bag* is, in
" its natural state, at least three or four times
" thicker and firmer than the posterior. The
" second difference, equally remarkable, is, that
" the delicate posterior hemisphere of the capsule,
" is furnished with a set of vessels peculiar to it,
" and altogether distinct from that which is trans-
" mitted to the anterior convexity of this sac,
" as the first is formed by the extremity of the
" *arteria centralis*, which, as if from a centre, dis-
" tributes branches to the circumference, while
" the anterior hemisphere of the capsule of the cry-
" stalline, which, as I have already said, is more

* Voyez Janin Mém et Obs. Anat. et Phys. sur l'Œil, Mém. sur la Caps. du Crist.

" compact than the posterior, receives its blood-
" vessels from those of the vitreous humour,
" which, having passed over the *zona ciliaris*, are
" irregularly incurvated, and ramify upon the
" anterior surface of the capsule."

The Professor, after speaking of separating the capsule from the zona ciliaris, adds, " But this " fortunate occurrence is very rare, as the zona " ciliaris most frequently connects the capsule of " the crystalline lens, so closely to the vitreous " humour, around the *annulus* of Petit, that even " in dissecting the eye, it is impossible to sepa- " rate the capsule, of the crystalline lens, from the " vitreous humour, without considerable lace- " ration*."

The younger De Wenzel, in his work on Cataract, in case 23, says, " When the section of the " cornea was finished, and my father attempted " to puncture the capsule, he was unable to ac- " complish his purpose, and the crystalline " plunged to the bottom of the vitreous humour, " which was quite fluid, and the hyaloid mem- " brane (the vitreous capsule) of which was wholly

* Scarpa on Diseases of the Eye, translated by Brigs, 360, 361, 358.

" destroyed." He adds, " The crystalline being " seized, and, as it were, harpooned, by the small " hook, was very large, and almost black; and it " brought away with it, its two capsules *, which " were white, and adherent to its surface†."

Mr. Ware says, in the same work, in a note on secondary cataract, " The posterior part of the " capsule, of the crystalline, lies in such close con- " tact with the membrane that covers the vitreous " humour, that the translator, (Mr. Ware) believes " it to be utterly impossible to engage, and ex- " tract the former, without, at the same time, in- " volving the latter‡."

De Gravers observes, " Almost all the ana- " tomists have advanced, that the crystalline has " a particular envelope, which is covered with the " capsule of the vitreous body. Experience, how- " ever, speaks to the contrary; for it is a fact " sufficiently cleared up, that the crystalline lens " has but one, and which stands by itself. The " opacity, to which it is subject, being so visibly " fixed as not to be able to extend further than

* By its two capsules De Wenzel, I presume, means its anterior and posterior parts.

† Page 162, 163, Ware's Translation of De Wenzel.

‡ Page 250, 251, ditto.

" the anterior or posterior circumference, was a " sufficient reason to make practitioners under- " stand, that in case this envelope had been an ex- " tension of those of the vitreous body, these should " have been more or less affected along with it."

He further says, " I was present when a blind " lady underwent the operation of the cataract by " extraction. As soon as the section was per- " formed, the aqueous humour ran down; and in " proportion, the cataract made its way out. It " forced open the circular fibres of the iris. The sec- " tion had hardly been finished, when the cataract " went out, and precipitated itself on the cheek. " We were very much astonished to see that this " opake body was exactly round, and its circum- " ference neither gummy nor lenticular as the " ordinary cataracts. It was as soft as a bag full " of water, and kept an hydatid form. When it " had been put upon a sheet of white paper, the " other eye was operated upon, and produced the " same kind of cataract, but of a globular form. " We made a close examination of these two " opake bodies, and observed, with a microscope, " that their surfaces were as polished as a looking-

" glass; it was not even possible to distinguish " their posterior parts, from the anterior, nor to " perceive the little excavations or grooves, wherein " were placed the basis of the fibres of the pro- " cessus ciliaris. After having cut open one of " these opake bodies, we then saw that the " crystalloida (the tunica propria) opened, pro- " duced a mucous and yellowish matter, which " spread itself over the paper. We observed also, " that, at the very instant the crystalline's cap- " sule was divided, or incised, that it sunk over the " opake lens, and had more consistence than in " the natural state. One of us pressed over seve- " ral places of the surface of the capsule of the " second cataract, which always gave way to the " pressure of the instrument; but, as soon as the " impression was not sensibly discovered on that " tunic, the comprimated part re-established itself " in its first state. We performed upon this opake " body the same incision as the above, but there " was no different remark worth making." He adds two similar instances which occurred to himself, and thus concludes. " These are irre- " fragable proofs that the crystalloida stands by it-

" self, and that it is not, as was believed, wrapped " up exteriorly with the capsule of the vitreous " body*."

Zinn, the celebrated anatomist, whose splendid work on the anatomy of the human eye, is justly considered the most perfect production, ever given to the world on the subject, and is quoted as the first authority, by the most eminent professors of surgery in Europe, after investigating the opinions of Vesalius, Vidius, and all the preceding authors, who had described the crystalline capsule, gives his own opinion in the following conclusive words:— " Quod si vero omnia accuratius perpendamus, " capsula lentis tunica propria a vitrea distincta " esse videtur, uti ex descriptione statim patebit." The author here goes on to shew what connexion is found between these two capsules, and says, " In oculis enim bubulis capsulam illam, unde

* It may be observed, that the author is here contending against the doctrine of the *tunica propria* being incased with the duplicature of the vitreous capsule, which is not the subject of the present discussion: his facts, however, very abundantly confirm the opinions of the other authors, of the existence of the tunica propria, independently of the vitreous tunic.

See De Graver's *Treatise on the Eye and Ear*, pages 182, 187, 188, 189.

" ipsa substantia crystallina extrusa fuerat,
" specillo immisso, tanquam sacculum inanem,
" hinc aut illinc attollendo, facile demonstrare
" possumus; sed interdum quoque mihi contigit,
" ut humorem vitreum, integra membranula, qua
" includitur, a capsulæ parte posteriore separare
" potuerim, qua præparatione satis apparuit, cel-
" lulositate vera utramque tunicam arctissime
" inter se coniungi.

" Ut autem lens crystallina eo facilius et tutius
" in sua sede contineri possit, in capsulæ partem
" anteriorem ultra circulum maximum, quod con-
" senticnte Ill. Hallero, certissimus affirmare
" ausim, immittitur Zonula illa fibris brevioribus
" transversis stricta, ex tunica vitrea orta, quam
" supra nomine coronæ ciliaris descripsi. *Quæ*
" *quidem insertio in partem anteriorem capsulæ im-*
" *primis contra eos pugnare videtur, qui capsulam*
" *lentis duabus lamellis tunicæ vitreæ secedentibus*
" *formari perhibent*.*"

Were it necessary, a multitude of facts could be added, to confirm the purport of the preceding quotations, but I shall confine myself to two, which, of themselves, would be sufficient, to de-

monstrate, the existence of a capsule, proper to the crystalline lens. These are, the results of two operations for artificial pupil, performed on two

* The first and last passages from Zinn are so exactly to the purpose, that I hope to be excused for inserting them, translated opposite to those passages which contain the anatomical error against which I contend.

ZINN.	MR. TRAVERS.
" In order that the crystal-	" I do not find, upon re-
" line lens may be more easily	" peated and strict examina-
" and safely retained in its pro-	" tion, any proper capsule in-
" per place, the little girdle,	" vesting the lens, *i. e.* which
" I have formerly described	" admits of being removed
" under the name of ciliary	" with it."
" crown, arising from the vi-	" The tunic of the vitreous
" treous coat, and secured by	" humour advances to the ci-
" short transverse fibres, is	" liary body: there it separates
" carried forward and inter-	" into two laminæ, &c."—
" woven into the anterior part	" The anterior lamina, which
" of the capsule, beyond the	" is the more dense of the two,
" greatest circle; and this I	" covers the crystalline in front;
" have not hesitated to speak	" the posterior lines the fos-
" decidedly on, as I have the	" sula of the vitreous hu-
" authority of the illustrious	" mour."—" *The crystalline,*
" Haller, in aid of my own	" *it will appear from this de-*
" assertion; which insertion in	" *scription, is incased in a du-*
" the anterior part, seems de-	" *plicature of the vitreous cap-*
" cidedly adverse to the opi-	" *sule.*"—" The posterior opa-
" nions of those, who declare,	" city before described (page
" *that the capsule of the lens*	" 11 in this work) is therefore
" *is formed by two lamellæ of*	" seated in the proper tunic of
" *the vitreous coat dividing for*	" the vitreous humour."
" *that purpose.*"	

ladies, about five years since. In each, the capsule of the crystalline was so hard and thick, that, although, I had no difficulty in dividing the iris, with the artificial pupil knife, yet it made no kind of impression on the capsule of the lens, which, with its contents, became spontaneously depressed below the margin of the pupil, as soon as it was detached from the posterior part of the iris. To this time no alteration whatever, has taken place either in the size, or form, of these opake lenses, which certainly proves that they must be enveloped in the capsulæ propriæ; otherwise the vitreous tunic being disorganized in a great degree, as shewn by the morbidly fluid state of the vitreous humour, admitting of the spontaneous depression of the capsule, they would have long since become dissolved and absorbed*.

I shall now close the subject with remarking, that the very different manner in which the tunica propria of the lens, and the tunic of the

* I have lately seen a very remarkable case, the particulars of which will be hereafter detailed, where the capsule, with its lens, became spontaneously separated from its natural adhesions; and has remained in a disorganized vitreous humour, depressed, and undissolved, below the axis of vision, for nearly twenty years.

vitreous body, are constituted, conclusively prove that they are totally distinct membranes, for there is no difficulty in injecting the vessels of the former, while, as far as I have been able to learn, no one has ever succeeded in injecting the vessels of the latter: indeed, without some artificial process, such as boiling, freezing, or putting the vitreous body into acids, the tunica aranea (as the vitreous capsule is called) cannot even be distinctly perceived. Moreover, I can assert, from repeated observations, that in cases where the capsule of the lens has been most dense, and thickened by disease, that of the vitreous humour has been either partially, or wholly disorganized; thereby shewing that an opposite action, had taken place in the two membranes at the same time, and in the same eye*. Now, on the contrary, in such cases, were Mr. Travers' opinion correct, we should never find any crystalline lens within the capsule; as the disorganized state of the vitreous humour, consisting in the total dissolution of its capsule, the supposed "duplicature" must become disorganized with the

* I have repeatedly had occasion to extract floating portions of thickened capsule, which, upon examination, I have found almost as tough as parchment, and full one-third its thickness.

other parts of that membrane, when the lens, would necessarily, either fall into the anterior chamber, or become depressed in the vitreous humour.

Cataracts differ as much in colour, as in consistence. They are found of every shade, from the whiteness of milk, to the black appearance of the pupil, which they sometimes so nearly resemble, that the black cataract, like the posterior capsular cataract, has been mistaken, and treated for gutta serena. While in Bath, upwards of six years since, I was consulted by Mr. W***, a gentleman engaged in an extensive brewery there, who had been blind for nearly twenty years, from cataract, which so nearly resembled the natural colour of the pupil, that his case had been considered, and pronounced, to be gutta serena. He had three times, during this period, gone to London, to obtain the best advice. The opinions uniformly expressed of his case, to the time of my seeing him, having been similarly unfavourable, he altogether concealed them from me, under the impression, that my knowledge of them would prevent me from operating, in opposition to the opinions of so many eminent practitioners; and I

neither was aware of them, nor the length of time he had been blind, until the operation for cataract had actually been performed by me upon one of his eyes. The result of this operation, was in the highest degree successful; for, after the retina recovered from the torpor, which its quiescence for so many years had occasioned, his vision was perfectly restored, and with the assistance of cataract spectacles, he sees to read, and write, nearly as well as he ever did. I have also happened, since my residence in London, to see three cases of dark-coloured cataracts within a fortnight, which were pronounced to be gutta serena, by a late celebrated oculist. Upon two of these, I afterwards successfully operated; and the third, which was in its incipient stage, has not yet become fully formed.

A great variety of colours, observable in cataract, have been mentioned by authors, such as lead, and iron colour, green, amber, &c., all of which, to an experienced eye, denote the varied consistence of that body. It is however, the opinion of many able surgeons (and Professor Scarpa is of the number), that previous to an operation, it is impossible to

decide with any degree of certainty, on the nature, and consistence, of the cataract.

Professor Scarpa says—" All that has been " hitherto written, and taught, upon this subject, " has not that degree of certainty, which can " serve as a guide, in practice; and the most " experienced oculist of the present day, is not " able to determine with precision, what the " nature, and consistence, of the cataract is, upon " which he proposes to operate; nor whether, " the capsule be yet transparent, or not, although " the lens be evidently opake*." In this opinion, the learned Professor I must observe, is certainly mistaken; for although I admit, that no written, or verbal description, can convey to an inexperienced practitioner, an accurate idea of the various kinds, and shades of cataract, yet, repeated observations will teach it to such an extent, if the operator has sufficient opportunities for making them, that an oculist of just and accurate observation, will rarely be deceived in his opinion, of the nature of the cataract, upon which he is about to operate.

* See Scarpa on Diseases of the Eye, page 354.

Indeed, in some cases, it is indispensably necessary to the success of the operation, that the operator should be certain, on this important point, as the instrument, and mode of practice, are conducted accordingly.

The size of cataract varies considerably in different subjects. In general, soft cataracts, particularly those of a dark colour, are extensive, both in their diameter, and thickness. In a considerable proportion of cases, I have found this sort of cataract, when placed in the anterior chamber, either for extraction, or absorption, to occupy the whole of that cavity, so as entirely to obscure the iris from view; and this frequently, when that membrane has been of a large size. At other times, it has scarcely filled two-thirds of its diameter.

The species of cataract hitherto mentioned, are of the simple kind, and most commonly arise from natural causes, with which we are very little acquainted, as cataracts frequently appear without any sufficient reason, to account for the morbid change in the crystalline lens, and its capsule. Occasionally, however, the disease

may be referred to various exciting causes, to which the malady can be clearly traced.

Inflammation of the iris, and capsule of the crystalline lens, whether proceeding from syphilis, or from common causes of inflammation of the eye, will produce capsular cataract, which is not unfrequently succeeded by lenticular cataract.

Both of these latter species of cataract, may also be produced by accidents; either, from a blow received upon the eye, or, from a puncture, with any sharp instrument. When a cataract arises from violence, the capsule of the crystalline lens is most commonly ruptured, whence, from the exposure of that body, to the action of the aqueous humour, it becomes opake, and then constitutes cataract. A puncture of the eye, also produces cataract, by wounding the capsule of the crystalline lens, so that, in either case, it is the exposure of the lens, to the action of the aqueous humour, which is the immediate cause of the disease in question.

When cataract has arisen from either of these causes, the opacity of the lens has been considered, as the effect of inflammation, but the

exposure of that body, to the action of the aqueous humour, seems to be a more just explanation of this phenomenon. For I have always observed, in cases of capsular opacity, with a *transparent lens*, that after dividing the lens, and placing the portions, in the anterior chamber of the eye, they have, in a few hours, become quite opake. It is evident, that inflammation could have nothing to do with this process, for the lens being wholly separated from its vascular connexion with the capsule, no inflammation could possibly occur, the source of inflammation, being thereby wholly cut off.

Indeed, it is a matter of doubt with me, whether the body of the lens, is, under any circumstance, capable of taking on inflammation, although, both from disease, and accident, the capsule is susceptible of it in a high degree*: and I think

* I have recently seen a very extraordinary instance of this kind, in the case of a gardener, who, while hoeing a gravel walk, was struck in the eye, by a bit of gravel, which gave him considerable pain at the moment, but which afterwards subsided. Finding his vision begin to diminish a few days after the accident, he first applied to a respectable practitioner in the country, and subsequently to me. I saw him about a fortnight after the accident happened, when I observed a yellowish spot within the upper part of the capsule, which I had no doubt was

it more probable, when opacity of the lens results from a blow upon the eye, without the capsule being ruptured, that it originates, from the derangement produced in the minute vessels of the lens, which occasions the want of a sufficient supply of blood, rather than an excess of it*.

pus, secreted by that membrane. Notwithstanding I used the most active measures to put a stop to any further secretion, it increased to such a degree, as to occasion, by its distention of the capsule, the most acute pains in the eye, and head, which became instantly relieved, on my introducing a cataract needle through the cornea, and making an opening in the capsule, from which, there immediately issued so considerable a quantity of pus, as nearly to fill one-fourth part of the anterior chamber. During some days afterwards, while remaining under my care, the secretion of pus seemed to increase in quantity. He then returned home; and on again consulting me, at the end of a month, I found the inflammation of the eye nearly removed, and the whole of the pus which had been effused in the anterior chamber, entirely absorbed, but the pupil had become contracted, and nearly obliterated. The small aperture still remaining open, was occupied by a portion of opake capsule, of a milk-white colour; and as he is capable of perceiving light, and the motion of bodies, when passed between his eye, and the light, there is every reason to expect success from an operation for artificial pupil, should it be thought proper to perform it.

* From the sudden, and almost instantaneous production of cataracts, which sometimes result from blows on the eye, it appears to me impossible, that inflammation can be the cause, as that action requires some short time, before it can come on. Mr. Pott mentions having seen four cases of cataract instantaneously produced by external violence.

This hypothesis, (for such it must be considered,) seems strengthened, by the manner in which cataract is supposed to occur in old persons, in whom the minute order of vessels, in common with those of every other part of the system, becoming obliterated, probably produces an opacity of the lens, from the want of nourishment, which, in consequence, being no longer influenced by the circulation of the blood, loses its vitality, and becomes opake.

Inflammation of the iris, and capsule of the crystalline lens, from whatever cause produced, will give rise to adherent cataract. In this case, coagulable lymph is poured out from the posterior part of the iris, during the inflammatory stage, and agglutinates that portion of the membrane to the anterior part of the capsule: by degrees the lymph becomes organized, and permanent adhesions are formed. This species of cataract is known, by a fixed contraction of the dimensions of the pupil, and an irregularity of form, occasioned by the adhesions, which prevent it either from dilating, or contracting.

The crystalline lens is said, sometimes to adhere to the internal part of its own capsule, which

thereby causes a great difficulty in effecting extraction, according to the usual mode of the expulsion of the lens, by pressure. I am at a loss to determine whether this is a disease from birth, or the effect of any subsequent morbid action.

The elastic cataract, as it is usually called, is in general congenital, that is, the patient is born with it. The capsule is commonly dense, and thickened, and contains some portion of unabsorbed lens; but it is not, however, in fact, more elastic than any other species of cataract, but has been supposed to be so, in consequence of the firmness and elasticity of the vitreous humour, which occasions the cataract, after being depressed, and even forced into the very centre of that body, to return to its natural situation, as if touched with a spring, the moment the needle is withdrawn. The term elastic cataract, therefore, tends to give an erroneous idea of the true nature of the malady, for it is the vitreous body, and not the opake crystalline, or its capsule, which causes its apparent elasticity.

Another complication of cataract, called the tremulous cataract, is that, in which the tunica ara-

nea, or capsule of the vitreous humour, is disorganized, occasioning a tremulous motion of the iris, and cataract, from the slightest movement of the eye. This undulatory motion I conceive, chiefly to arise, in consequence of the disorganization of the vitreous tunic, whereby the support to the lens is lost, which is usually afforded, by those processes of the membrane, which pass over, and are united, to the anterior circumference of the crystalline capsule, and keep it firmly attached to the body of the vitreous humour; from the want of which support, and indeed from the want of solidity, and firmness of the vitreous humour itself, both the iris, and lens, will move to, and fro, with every motion of the eye, as expressed by Mr. Saunders, " like a rag agitated in a stream."

The encysted, or hydatid cataract, as it has been sometimes called, differs in form, from every other species of cataract, in being of a spherical, instead of a lenticular form. Its capsule, is very unusually hard, and tough, and sometimes contains a whitish opake fluid; at other times, its contents are said to be similar to that which is found in hydatids, in other parts of the body. Richter mentions, having extracted a cataract of this kind, which he describes as being " very large, quite round, and

" milk white." I have myself seen a case of this kind, but did not operate on it.

The species termed secondary cataract, is, an opacity of the capsule, which comes on subsequently to the extraction, or depression, of the opake lens, and occasions secondary blindness, after the patient had recovered his sight, from the operation.

Besides the complications already noticed, cataract is found to exist in eyes affected with ophthalmia, opacity of the cornea, pterygium, staphyloma, a disorganized, and discoloured state, of the vitreous humour, (without the tremulous motion already noticed,) a closure of the pupil, dropsy of the eye, gutta serena, &c. But as cataract most commonly depends, either, on a derangement in the functions, or an obliteration of the vessels supplying the crystalline lens, it may occur spontaneously, and without reference, to any other disease, with which, the eye may be affected.

The first symptom, of the approach of cataract, is marked, by a slight obscurity of vision, as if the patient was looking through a cloud*, light

* This state of vision was most accurately described by a patient labouring under Incipient Cataracts, who remarked, that objects appeared to him as if he looked through water in which a drop of milk had been diffused.

smoke, or dirty glass, which is frequently accompanied with the appearance of black specks, cobwebs, flies, &c. flitting before his eye*. At first, there is so small a change in the appearance of the crystalline lens, that no person by examining that body, would be led to suspect the approach of cataract, as the dulness of vision perceived by the patient, I believe generally, if not always precedes, any observable change in the transparency of the lens, which frequently renders it, exceedingly difficult to determine, between the first approaches of gutta serena, and of cataract. Shortly afterwards, the pupil loses its beautiful jet black colour, and assumes a turbid appearance, which muddiness, increases by degrees, until at last, the lens becomes entirely opake, and of a white, yellow, or dark colour, constituting what is called, a mature, or ripe cataract.

During the whole of the advance of the cataract, unless it be complicated with any other state of disease, the natural functions of the iris are preserved, and no pain whatever, is felt in the eye, or

* I have known two or three patients, who, on looking at a luminous object, saw it multiplied ; in particular, they described seeing three or four moons instead of one, which, as well as the muscæ volantes above noticed, can only be attributed to a morbid action in the functions of the retina.

head. So little conscious indeed is the patient, of the existence of cataract, when it attacks but one eye at a time, that he is frequently ignorant of the loss of sight in it, until, by accidentally covering the other, he finds himself wholly dark; or, from being unable to judge accurately of distances, he spills his wine, in attempting to pour it into a small glass, or cannot with certainty, snuff a candle, and is hence induced to examine his eyes separately. In one instance which I saw at Exeter, where cataract was produced, by a blow from a bush, the wife of the patient soon after, observed a whiteness of the pupil, which she did not mention to her husband, lest it should alarm him; and it was upwards of three weeks, before he knew himself to be blind, in one eye, by accidentally putting his hand over the other.

The disease, generally commences at first in one eye, and, by the time it has made any considerable progress, the other eye becomes affected. This, however, is not always the case, as I have known ten, or fourteen years, to intervene between the production of cataract in one eye, and the subsequent formation of it in the other. There is an equal degree of uncertainty, in the period of time, required for the complete formation

of cataracts. I have known them completely formed, (and when not arising apparently, from any particular exciting cause,) in the short space of three months, whereas in other instances, if I may credit the patients' statement, they had been gradually losing their sight, for upwards of ten years. The usual length of time, is between one, and three years, which embraces the period, when the obscurity of vision first commences, until the cataract is completely formed. When however, the cataract is produced by accidents, or arises from the application of any peculiar exciting cause, it will sometimes form, in an almost incredibly short space of time.

Richter mentions the case of a forester, who, 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 sight, the same night. He adds, " I saw him next morning, and found a " complete pearly-coloured cataract. Eschen- " bach relates a similar case."

Tartra, in his excellent Thesis on Cataract, mentions a case, related by Fabrice de Hilden, of a lady about fifty years of age, who, having wept a great deal for the loss of a relation, became

blind from cataracts in one night, without pain, or inflammation.

He also mentions, that he was informed by Weidmann, a celebrated surgeon of Mayence, of a case of cataract, which suddenly formed in the eye of a man, on his quitting a feast very much intoxicated. Tenon states, that he had seen a lady with two cataracts, which were completely formed in one day. He also relates the case of a potter, who going into his pottery while it was heated, came out with two perfect cataracts.

I have myself, witnessed the production of cataracts from accidents, in a very short space of time: in one instance, the patient perceived a great dulness of vision, immediately after the accident occurred, and shortly afterwards, a cataract was observed to have formed. When cataract results from age, or is produced by any other natural cause, the progress of the disease is, however, (as before observed,)much more slow; but, whatever may be the cause, or whatever period the cataract may have taken for its formation, still, if the eye has sus tained no serious organic injury, and the functions of the retina are not permanently deranged, an equally favourable result may be expected, from an operation for its removal.

Neither age, nor sex, appear to be exempt from this disease. Children, are often born with it. Frequently, it proceeds from an hereditary disposition, which has existed for several successive generations; while in other cases, it attacks several members of the same family, where no disposition of the kind, had been recognizable in their progenitors. Facts, illustrative of these positions, are recorded by different authors.

Richter, extracted the cataract from a patient, whose father, and grandfather, had been affected with the same malady, and in whose son, at that period, it had begun to manifest itself. He says, that he had seen three children, all born of the same parents, who acquired cataracts, at the age of three years. Petit de Lyon mentions, having in the same year operated upon the grandmother, mother, and son, for cataracts. Janin, mentions a whole family of six persons, who laboured under this disease. Morgagni, saw three sisters affected with cataracts, while their three brothers were free from the disease. During my residence with the late Mr. Hill, of Barnstaple, I was present, when he operated for cataract, upon two brothers and a sister, adult subjects, who stated, that

three or four others of their family, were affected with symptoms, similar to those they had experienced at the commencement of the complaint*. Petit de Lyon operated upon three of the same family, who were born blind of this disease. This operation has been performed by me, upon three, of five sisters, who were all born blind; in another instance, upon three, out of four, of a family, affected with congenital cataracts. In Dublin, I operated upon one, of seven children, five of whom were born with cataracts, whose grandfather, and father, according to the mother's statement, were both born blind with the same disease; and about the same period, I operated for congenital cataract, on two children of a blind harper, who was himself born with cataract. Several other instances, have occurred, which induce me to believe, that cataracts, whether

* Cataract is not the only disease of the eye with which whole families are attacked. Mr. Lucas, surgeon of the Leeds Infirmary, mentions, in a paper published in the Medical Observations and Inquiries, vol. vi. that he had seen a part of a family of five children, who were born blind; and from his statement, it appears, that cataract was not the cause of blindness. During my residence at Exeter, a poor man brought me two of six children, all born blind from amaurosis; and I have seen part of a family of several brothers and sisters, all of whom laboured under hemeralopia.

congenital, or formed after birth, are apt to affect several individuals of the same family; there is no doubt, too, of its being hereditary, and (what is very remarkable) that in all the cases of congenital cataract which have fallen under my notice, where more than one child in a family has been affected, it has invariably occurred in succession. For example, in a family just alluded to, consisting of seven children, the two eldest brothers enjoyed perfect vision, while the five younger daughters, laboured under congenital cataract*. In another family, the eldest daughter in like manner enjoyed perfect sight, while the three other children were born blind†. The fact observed by Mr. Saunders is still more remarkable, that the same character was preserved in the cataracts of children belonging to one family, though, in one instance, there was a difference of six years between the ages of two brothers‡.

Syphilis may be ranked among the causes of

* See Cases 19, 20, 21, in my work on Diseases of the Eye.

† See Cases 22, 23, 24, Ditto.

‡ In a majority of cases, I have myself witnessed the same uniformity of character under similar circumstances; though in other instances, as in the family last noticed, the eldest of the two daughters laboured under slate-coloured cataracts, with a transparent edge, while those of the brother, and younger sister were fluid, with opake capsules.

cataract, and I am of opinion that in such cases the opacity is always at first seated in the capsule, (though it may afterwards sometimes extend to the lens,) and generally arises from an inflammation of that membrane, and not from coagulable lymph having been effused from the inflamed vessels of the iris, and deposited on its anterior surface. I was led to adopt this opinion, from repeatedly observing, in the commencement of syphilitic inflammation of the iris, that although the pupil was very little contracted, yet the patient had entirely lost the power of discerning objects, and could only distinguish light from darkness*. This state of the disease, is accompanied, merely with a haziness of the capsule, which usually disappears, within forty-eight hours after ptyalism has been produced, when vision is again restored to its natural clearness. Were there any deposition of lymph, on that part of the capsule opposite to the pupil, it must be visible when first examined, and could not disappear, in so short a time after the action of mercury shews itself. But what I

* It is by no means uncommon for the pupil, to be even of a larger size than usual, at the commencement of syphilitic inflammation, notwithstanding which, blindness is as complete as if it were entirely closed.

conceive fully proves, that the opacity in the capsule, arises from some morbid action in its own vessels, and not from lymph effused by the vessels of the iris, and deposited on the surface, is; that the opacity frequently comes on without any inflammatory action in the iris, months, or even years, after the extraction of the cataract has been successfully performed; and that, in congenital cases, the density and thickness of the capsule, increase in proportion to the length of time it is suffered to remain. If any further proof were necessary to confirm the fact, of the capability of the capsule of the lens to become inflamed, independent of any inflammation of the iris, it would be found in the case of the gardener, already detailed, in which suppuration of the capsule took place within its cavity, while the iris, except at one small point, had contracted no adhesion, and the pupil in every other part, possessed its natural form and power of contraction.

Inflammation of the iris, or capsule of the lens, (not of the syphilitic kind) is a source of capsular cataract, which is frequently succeeded by opacity of the lens itself. I have seen, capsular opacity produced in different instances, from the chronic

stage of the Egyptian ophthalmia, when existing in a severe degree, and having been protracted for a long time.

Scrophula, is said to be one of the predisposing causes of cataract. I am not however aware of having ever met with a case, which could be traced to this source, although I have certainly found the disease exist in persons born with cataracts, as also in those, who have become subsequently blind from the same cause. Scrophulous inflammation, when it occurs, generally attacks the cornea, conjunctiva, or edges of the tarsi, but I do not recollect ever to have seen, any of the deeper seated parts of the eye, attacked with this species of ophthalmia.

Strong emotions of the mind, such as violent anger, grief, &c. have produced cataract; an instance of the latter, as also one from drunkenness, have been already mentioned.

A continued exposure of the eyes to a strong light, and heat, are also considered causes of cataract, and there are strong grounds for believing, that they contribute in a great degree to its formation. The number of Europeans affected with cataracts in the East, and West Indies, is believed to be

much greater, than a comparatively similar number of persons would be, in this country. Petit de Lyon mentions, that in more than three hundred cases of cataract which he saw, three fourths, were labourers; and this he supposes to have arisen, from their working in the glare of the sun, with the head stooping, and their eyes necessarily fixed on the ground, from which the rays of light were strongly reflected.

So many remedies, internal, as well as external, have been proposed by authors, for the cure of cataract, that it would be endless to mention them. Experience has sufficiently shewn their inutility, and in many instances, their injurious consequences to the patient's constitution, particularly, when adopted, a short time previous to an operation.

The confidence, formerly entertained, of the efficacy of these remedies, for the cure of cataract, had therefore, (more particularly in this country,) justly subsided in a considerable degree among respectable practitioners, acquainted with diseases of the eye, until Mr. Ware revived the hope, by publishing the supposed success, of the application of vapour of ether, in the removal of several cases

of cataract. These cases, were however, all produced by accidents, in which description of cataract, (as has been already stated,) the capsule of the lens being almost always either burst, or punctured, the removal of the opake body was the result of the action of the aqueous humour, and not of the application of the vapour of ether. Indeed it appears, as if Mr. Ware had latterly, (when the solvent powers of the aqueous humour began to be more fully appreciated,) been himself of this opinion, having, in the last edition of his Observations upon Cataract, withdrawn the cases alluded to, contained in the former edition.

It is not, however, the application of local remedies to the eyes, to which I so strongly object, as to the internal remedies which are sometimes employed; having repeatedly seen the health of patients greatly impaired, by the use of means most improperly prescribed, for the unattainable object, of curing incipient cataracts by internal remedies,

Lenticular cataract, whether incipient or confirmed, coming on spontaneously, either in youth or age, cannot be cured without a surgical operation. This is a fact which I believe (although it has

been asserted to the contrary) no professional man competent to form an opinion on the subject, will deny. But the precise nature of a cataract, is not, as appears from what has been before stated, always recognizable to experienced practitioners, and its earliest stage, can scarcely at times, be distinguished by them; if, therefore, from the ambiguous appearances which sometimes present themselves, they occasionally commit errors of this kind, it is no matter of surprise that those who are much less competent to form an accurate judgment should do so; and this I think accounts for the statements so positively made, of lenticular cataract spontaneously formed, having been cured by internal and external means.

Having given my opinion thus decidedly, I shall proceed to explain the grounds, upon which I found that opinion.

The crystalline lens is less within the influence of the circulation of the blood, than any other part of the human frame. Whatever nourishment it may receive must be derived from the vessels of its capsule, which possess no other channel of communication with the general system, than that which is afforded by the minute branches of the arteria centralis and those of the vitreous humour. The

delicate structure of the capsule, implies a great fineness of vessels, the office of which must be confined to the transmission of a transparent fluid. It has therefore been contended, and I think with great probabilty, that cataract in old persons, or those in whom the animal powers, according to the course of nature, are suffering by slow decay, is occasioned by an obliteration of the vessels which nourish the crystalline lens.

By whatever process the disorder may be produced, it is obvious, that it is not likely to be easily within the reach of medical treatment; and the almost uniform failure of general, and local remedies, leaves no other resource for the patient, than an operation.

It will be granted to me, without much hesitation, that no solid body, in any part of the system, admits of being removed by the absorbents, without first undergoing solution. A supposition to the contrary, involves the absurdity of believing, that the finest, and most delicate series of vessels of the body, whose largest trunks are with difficulty made visible by dissection; and whose smaller tubes are not cognizable to the senses, and can only be proved to exist by analogical reasoning, should possess the mechanical power of

abrading the solid substance of bone. The power of these vessels in absorbing fluids is undeniable; and it is equally certain, that portions of exfoliated bone are removed by them, and carried into the general system; but their structure shows the impossibility of their exercising a sufficient force, for this purpose, upon solid substances; it is, therefore, more than probable, that solution takes place, as a preliminary process to absorption. This reasoning applies with equal force to the absorption of solid cataracts, for, in proportion to the comparative size of the absorbent vessels, which the lens and capsule possess, the resistance will be equal to that, which is offered by bone, to absorbent vessels of a larger size, in other parts of the body. One necessary step, therefore, to the removal of a solid, lenticular cataract, is first of all to effect its solution.

To accomplish this, completely within its capsule, and without the solvent agency of the aqueous humour, must be admitted, to be beyond the power of any internal, or external remedies.

The spontaneous solution of the lens, in the humour morgagni, which sometimes occurs, from the morbid increase of that fluid, has never been

imitated by art; and, if it could, it would not serve as an argument against my position, for the solution is seldom perfect, and it is well known, that in persons born with fluid cataracts, when they are suffered to remain for some years, without being operated upon, although the fluid part becomes absorbed, yet the grosser parts of the lens are still left behind, and cause as great a degree of blindness, as if the disease had existed in its original state.

These premises being admitted, it will follow, that the aim of those, who pretend by internal, or external means, to arrest the progress of the cataract in its incipient state, in old persons, should be to prevent the obliteration of the minute order of vessels which nourish the lens, and when (as is, it is to be feared, invariably the case) the progress of the opacity cannot be arrested, to endeavour to effect a solution of the crystalline, preparatory to its absorption. But what is the practice recommended, to accomplish these great desiderata? One which, according to every pathological principle, is the very reverse of what it should be;—the use of external, and internal remedies, which increase the action of the

absorbents, whereas it is the strength, and activity of the arteries, which should be increased, whose want of vigour, gives origin to cataracts in old persons, and prevents the regular secretion of the humour morgagni.

The absorbents being more active, in proportion to the activity of the arteries in old persons, than in those who are less advanced in life, remedies calculated to excite their action, are liable to occasion the absorption of the humour morgagni, which, though an imperfect menstruum of the lens, is the only one to which it is accessible within the capsule, and thus renders the cataract more hard and insoluble, than if they had never been employed. That the absorbents, are able to produce this effect of removing the humour morgagni, and the fluid existing in the structure of the lens, even, without having their action increased by local stimulants, and the internal administration of mercury, I cannot doubt, from having very often, I may say generally, found, in aged persons, that, when the opacity of the crystalline lens was complete in one eye, the cataract was so hard, and solid, as to require extraction, while, in the other, in which the opacity had not advanced

so far, I had no difficulty in cutting the lens at once in pieces.

The power of the absorbents, in the capsule of the lens, is very inconsiderable, compared with that of the same class of vessels, with which the concave surface of the anterior chamber of the eye is furnished. That these latter vessels, are always active in a healthy eye, may be inferred from the fact, that a fluid cataract, is sometimes absorbed within a few hours, after its escape out of the capsule, and, in one instance in my own practice, this effect was produced before the needle was withdrawn from the eye *.

It follows, therefore, when the capsule is in a healthy state, that if a perfect solution of the lens, within its capsule, could be accomplished, the cataract might possibly be absorbed; but the possibility of absorption, while it remains in situ, with its capsule entire, is much less than it would be, if it were exposed to the action of the absorbents, diffused over the two chambers of the eye. Supposing, however, absorption within the

* This case occurred to me in Edinburgh, in the presence of Mr. Russell and Mr. George Bell, surgeons of the Royal Infirmary, and of many other professional gentlemen. See my work on Diseases of the Eye, p. 166.

capsule to take place, it is evident that perfect vision would not be restored, unless the capsular vessels, possess the power of reproducing the lens, or filling its vacancy by the secretion of a perfectly transparent fluid; because, the anterior portion of the capsule, must collapse upon the posterior, and if sight were restored, it would necessarily be indistinct and confused.

But it is plain, the difficulty consists in effecting the solution of a solid cataract, and not in procuring its absorption, after it is dissolved. This was strikingly exemplified in the following case. An old lady of seventy, from whom I successfully extracted a cataract, was shortly afterwards attacked with a liver complaint, which seemed to terminate in atrophy, and after six months' lingering illness, during which period she was attended by different physicians, she died. Although the lens was successfully extracted, and she was enabled to see minute objects, yet there was a small fragment of the opake lens, the size of a large pin's head, which lay behind the iris during the operation, but afterwards ascended, and got within the pupil, where it remained undissolved even to her death; after

which I examined the eye, and found this fragment unchanged, notwithstanding, the activity of the absorbents had been so great, as to have reduced her to a state of the most extreme emaciation. Now, had the power solely rested in the absorbents, it is evident this small portion would not have remained unabsorbed, the eye, in the space of a fortnight or three weeks after the operation, having been entirely free of inflammation. If the patient had been in health, I do not doubt, but, that it would have become dissolved, and subsequently absorbed, in two or three weeks, having frequently seen entire cataracts, even when solid, and in old persons, absorbed within six or eight weeks, and sometimes in a shorter period, after being divided, and placed in the anterior chamber.

In young persons, in whom the *arterial system* is predominant, solid cataracts, it is well known, dissolve much more speedily than in old persons, in whom the *absorbent system* is in the greatest state of activity; which facts coupled with the immediate removal by absorption, of the milky or fluid cataracts, after being operated on, indisputably prove, that the facility of absorption in every cataract, depends upon its ready solution, and

not on the activity of the absorbents. Hence, the obvious inutility of medicines and applications, whose action is confined, to increasing the activity of the latter class of vessels, which, it is seen, are always active when the eye is in a state of health.

It must, however, be understood, that I confine these observations to cases of cataract, which occur spontaneously. When they arise from accidents, from syphilis, or from any other disease, which is capable of relief by local, or internal remedies, then, they may perhaps possess some degree of efficacy also, in the cure of the cataract; although, I confess I have never seen any, but capsular opacity relieved by these means. In cases of capsular opacity, resulting from syphilis*, I have very often succeeded in restoring perfect vision, when the opacity was so dense, as entirely to preclude the rays of light from the retina, during the incipient stage of the inflammation.

* It must, I imagine, either be the success of mercury in recent cases of this species of capsular opacity, or the erroneous notion that some deposition causing opacity takes place, which has led to the adoption of that remedy for the cure of every species of cataract; in the same manner that ether has been supposed capable of curing it, because the lens contained in a broken, or ruptured capsule, had disappeared while under its use.

In other cases also, of inflammation of the capsule of the crystalline lens, from whatever cause it may arise, it is possible, that medicines, and applications, may be useful, and they may therefore be tried. But even here, unless employed at the very commencement of inflammation, the opacity will be found beyond the reach of medicines, or topical applications, and requiring an operation for its removal.

Secondary cataract, resulting, as already stated, from opacity of the capsule of the crystalline lens, after the operations of depression, or extraction, have to all appearance, been successfully performed, I have never known in any instance cured by medical treatment, after the opacity was fully formed; although it is apparent, if internal, or topical means were capable of curing any species of cataract, it would be that in the capsule, which is so much more within the reach of such remedies than the lens itself.

The conclusion then to be drawn, from all the circumstances detailed, is, that incipient cataract cannot be arrested in its progress, nor a confirmed cataract be removed by topical or general remedies, or any other means than an operation.

Professor Scarpa has laid down, a very judicious mode of preparing weakly and irritable patients for the operation of cataract, by advising cinchona and valerian, and the use of strong aromatic broths, for some time previously, in order to allay irritability; and he remarks, that lowering means being employed on such subjects, by increasing their irritability, would render them more susceptible of inflammation after the operation.

Admitting the accuracy of this doctrine, which my own experience fully confirms, it is evident, that rendering a weakly patient more irritable by the loss of blood, mercurials, blisters, &c., in the delusive expectation of effecting an impracticable object, is not only improper as far as affects the general health, but also in many cases, is in a peculiar manner detrimental, when an operation is to be performed, and conduces in the highest degree to its failure.

The patient should therefore be advised, patiently to bear his increasing dulness of vision; and should there be any other disease of the organ, or of the constitution, it should be removed by appropriate applications, medicine, regimen, &c.

I sometimes recommend, the occasional application, of a weak solution of belladonna, to the eye, for the purpose of dilating the pupil, by which the rays of light, being admitted to pass through the edge of the cataract, where the opacity is usually less dense than in the centre, vision is improved so long as the dilatation continues. This temporary increase of the power of vision, contributes to the comfort of the patient, during the period which intervenes, between the formation of a cataract, and its becoming ripe for operation.

It is the duty of the operator, previously to his undertaking the operation, to consider, whether there may not be other diseases of the eye, with which the cataract is complicated, and which forbid its performance. Such for instance would be a very extensive opacity of the cornea, covering the whole of the pupil. Staphyloma, dropsy of the eye, a diseased sensibility, or a total insensibility of the retina, &c. &c. There is, however, sometimes considerable doubt respecting the insensibility of the retina when complicated with cataract, whether simple, or with a contracted or closed pupil.

I have already mentioned instances, where a

dark-coloured cataract, and an opacity of the posterior capsule, have been mistaken for gutta serena; and the patient's blindness been regarded as incurable. To those species of disease, which have occasioned an erroneous prognosis, may be added that of an opacity of the posterior part of the crystalline lens, while its anterior part remains clear; an instance of which (occurring in one of the Greenwich pensioners) had existed for nearly twenty years, without the detection of its real nature, although it had been subjected to the examination of the most respectable oculists; he was nevertheless restored to sight, so as to be enabled to read the smallest print, by the removal of the crystalline lens. This man's case was so very extraordinary, that I hope to be excused for inserting it at some length. About twenty-five years before he was operated upon by me, in common with the other blind pensioners of Greenwich hospital, he had been struck blind from lightning, while on board ship. Being invalided, his sight was restored by the usual means for gutta serena, when he returned to active duty. In a short time, he found himself again losing his sight, and, in a couple of years, became as blind

as before, when he was a second time dismissed the service, and admitted into Greenwich hospital, where he remained until I operated upon him. It was during this period he made the numerous applications for relief alluded to. What contributed materially to conceal the true nature of his disease, (independent of the deep seat of the opacity,) was his labouring under many symptoms, analogous to those which distinguish gutta serena. The latter circumstance is by no means uncommon where the retina has remained for a long time unexercised, when it frequently takes on symptoms so much like those which characterize that disease, as to render it very difficult to ascertain its true nature. Indeed, in the present instance, as well as in many other patients upon whom I have operated, I have found the retina, where the cataracts have existed for a long time, so insensible for the want of being habituated to light, its natural stimulus, that, not only for a considerable period previous to the operation, has it assumed many of the symptoms of gutta serena, but, even after the most successful removal of the cataract, it has been a considerable time before the retina has recovered its natural sensibility. It is, therefore, of great practical

importance, that this form of disease of the retina, or the optic nerve, should be accurately distinguished from the true gutta serena, because, from the instances adduced, as well as many others which have occurred in my practice, there is every reason to suppose, there are many persons whose sight admits of being restored, in a greater or lesser degree, by the removal of the cataract, but who, from the unfavourable opinions pronounced, have given up all attempts to obtain relief.

As proofs of the proportion of cases, which, from their ambiguous and unfavourable nature have been regarded as incurable, I refer my readers to the table in the latter part of this publication, descriptive of the species of cases upon which I have successfully operated on the pensioners of Greenwich hospital.

Not only in simple cases of cataract are practitioners liable to be deceived, but, when that disease is complicated with contracted or closed pupil, the same equivocal symptoms which lead to the apprehension of the existence of gutta serena also prevail. In these cases I think it probable, that the retina has sustained some degree of organic mischief, during the deep-seated

inflammation which preceded the closure of the pupil; for though, in by far the greater number of cases in which I have formed an artificial pupil, and removed the cataract with which it was complicated, vision has been restored as perfectly as after the most successful removal of simple cataract, yet it not unfrequently happens, from the cause above mentioned, that the retina is found nearly insensible immediately after the operation; but, from the subsequent exercise of the organ with deep convex glasses, its sensibility is after some time so far restored, as to afford the patient a very useful degree of vision.

It may be asked, what are the diagnostic signs which should influence an operator in his decision upon the propriety of operating, or otherwise? Certainly, not solely the state of the pupil; for, in many cases of confirmed gutta serena, the pupil is of a natural size, and even possesses a considerable degree of mobility when exposed to different degrees of light; while, on the contrary, it is frequently found, when the retina is in a perfect state of health, of a larger size than usual, and incapable of motion. This morbid condition of the pupil, so nearly resembling its appearance during the

existence of gutta serena, may be occasioned either by adhesions of the iris to the capsule; by a paralysis of the fibres of the iris, which I have seen result from a blow, without the retina having received any injury; or by an enlarged and softened state of the lens pressing upon the posterior part of the iris, and plugging open the pupil, which latter species of case is by no means a rare occurrence. But what renders the decision more embarrassing, to a practitioner not fully conversant in ophthalmic surgery, is, that when the retina is in a morbid state from the want of being exercised, the patient observes flashes of red or white light, black spots, streaks, flies, &c., floating before his eyes, which, when existing with confirmed cataract, have been generally considered symptoms so strongly indicating gutta serena, as to render any operation for the restoraion of sight inadmissible, and yet, in such cases, by the removal of the opake lens, vision has, nevertheless, repeatedly been restored*.

It is, therefore, and has long since been a rule with me, to advise an operation, when-

* See Case 43, in my Practical Observations on Diseases of the Eye.

ever a cataract is found to exist, whether complicated with adhesions to the iris or not, if the patient is capable of perceiving light from darkness, and the motion of an opake body between his eye and the light; for, although I have sometimes been disappointed in my expectations of the result of operations, when undertaken under such circumstances, yet, in by far the largest proportion of cases, the attempt has been successful, in restoring vision in a greater or lesser degree.

CHAP. II.

History and Nature of Depression.

ALTHOUGH it has been asserted, and no doubt accurately, that the cataract and its capsule have sometimes *spontaneously* disappeared, it has, I trust, in the preceding chapter, been satisfactorily proved, that this desirable event can never, or at least, is very unlikely to be effected, by internal, or external remedies, and, consequently, that an operation is necessary for their removal. Whenever, therefore, a cataract is observed, (unless there is something in the eye, or constitution, which contra-indicates an operation,) it will be for the operator, first, to endeavour to ascertain the species of cataract, and next to determine upon the nature of his operation.

The operations for cataract, consist either, in removing the opake body from the axis of vision, by placing it at the bottom of the eye, which is called couching or depression; extracting it altogether, which is generally called the operation of extraction; or effecting its removal by the absorbents, after producing its solution in the

aqueous or vitreous humour, which I shall name the Absorbent Practice*.

There have been different modes proposed for executing each of these operations. It is my intention, in the present publication, to describe the operations as usually practised, and to examine their different stages, in order to point out the advantage or disadvantage which may respectively attend on each; after which, I shall endeavour to explain the superiority of the methods of operating, which I have already laid before the public, in my work on Diseases of the Eye; to this it is proposed to add, a full description of a new mode of performing extraction, which has been matured and extensively practised by me, since the appearance of that publication.

A candid examination of this kind, as well as a general statement of the comparative success of the different operations in common use, appear to be necessary, in order that the profession ge-

* In the operation for depression, it is the object of the surgeon to effect the absorption of the lens equally, as in the operation I have called the absorbent practice; but as this cannot always be effected in the former, and is, in fact, a secondary consideration with the operator, I have, for the sake of brevity, ventured to make use of the term for the latter, as conveying so accurate an idea of the nature of the practice.

nerally, may be informed of, and thereby, be enabled to decide on, the relative merits of the various operations for the removal of cataract: it having been usual for those practical authors, who have hitherto written on the subject, to confine themselves in a great measure, to the consideration of the operation, which they themselves were accustomed to perform.

It has been remarked by Professor Scarpa, in his Observations on Cataract, when speaking of the two operations of depression and extraction, that " it has long been disputed which of these " two methods ought to have the preference, and, " in the warmth of discussion, the advantages of " the one, and the disadvantages of the other, " have been exaggerated by both parties*."

A work, therefore, embracing a dispassionate consideration of their relative merits and defects, would be a desideratum, to the profession of surgery, and highly important, to

* Mr. Pott had previously made a much more serious charge against the advocates of extraction when he says, that only the fair and prosperous side of the question, respecting that operation, had been industriously exhibited, while its manifold failures and ill consequences had been as industriously concealed.—Pott's Chirurgical Works, vol. iii. page 207.

the welfare and benefit, of the numerous individuals afflicted with the disease in question. Previously to entering on this inquiry, however, the author wishes to disclaim all attempts to depreciate the operations practised by others, or to obtain a preference for any favourite mode of operating, not borne out by facts, and sound argument. His own opinions are the result of considerable experience, and practical observation, and therefore are entitled to be received with candour; but as even in these there is a liability to error, he presents them to the public, together with those of others equally skilled in the profession, that they may be subject to that investigation, which is so essential to the cause of truth.

Almost from the earliest periods of medical history handed down to us, as before stated, the operation of depressing or couching the cataract, as it is generally called, has been known, and appears to have been in common use. Celsus describes it, and we find it in the works of almost all succeeding medical authors. It would appear, from an exceedingly interesting paper by Doctor Scott, (the ingenious practitioner, who first introduced nitric acid in the cure of syphilis,) inserted

in the Journal of Arts and Sciences, that this operation is performed by the native operators in India with great manual dexterity; and, as the art is handed down, from father to son, it is probable, that it may have been practised from very remote times*.

* In a letter upon this subject, with which the Doctor has recently favoured me, he says—"From all I have yet seen, I know "not what to say with regard to the country, much less the "individuals who gave rise to the method of depressing the "cataract. In a more selfish light, it signifies nothing by what "means we have attained any of the benefits of civilization; but "still the human mind cannot rest satisfied, without some grate-"ful endeavour to ascertain the sources of the blessings we "enjoy."

General Reynolds, who, from his extensive knowledge of India, arising from his geographical pursuits throughout that vast country, is peculiarly acquainted with the information possessed by the natives, informs me, that the works of Hippocrates, and Galen, are generally known there, more especially by the Mahomedans. He further states, that these, and other works, which he supposes to have been saved from the conflagration of the Alexandrian Library, have been translated into the Persian language, with which country the inhabitants of India, have a continual and frequent intercourse. In a conversation I have had with Doctor Scott upon this subject, he is however disposed to believe, from the marks of great antiquity constantly observable in India, and the knowledge of various branches of science possessed by many individuals of that country, that the operation of couching may have been known long before the time of Celsus, which he is the more inclined to suppose, from its being executed so differently (as will be presently shewn) to that described by Celsus, Rhasis, Avicenna, and other ancient authors.

Round, sharp-pointed, and cutting needles, have been at different periods invented; the former with the hope of rolling the cataract, or supposed membrane, around them; the others, either to make a smaller incision in the sclerotic coat; or to cut the strings or ligaments, which, according to the inventors' opinions, attached the cataract to the ciliary processes. Roche Mathiole, is said to have contrived a pincer of gold wire, pierced through a cannula, which he entered through the eye, in the hope of embracing the cataract with the pincer, and then drawing it out, without any difficulty. Feistag, also invented another sort of pincers, with a spring, terminating in a needle, with which he proposed to extract the membraneous cataract. Ambrose Paré is said to have been the first person who (although he had not an accurate idea of the seat of the cataract) conceived the true object, and mechanism of the operation; and he gave such sound precepts upon the mode of performing it, that they are still followed by modern practitioners, and the needle which he invented, is very similar to that which is at present frequently used.

The operation of depression, as practised by the

native operators of India, I shall describe in Doctor Scott's own words. They employ two instruments in this operation.

"The first instrument is for perforating the "coats of the eye. It is sharp-pointed, but soon "becomes thicker than a common lancet. This "seems to be necessary for two reasons: first, "to avoid the risk of its breaking, from the thick-"ness and density of the sclerotic coat; and, "secondly, to make an opening of sufficient size "to admit the second instrument for depressing "the lens. The first instrument, is made of steel, "the second of brass. About the fourth, or "fifth of an inch, above the point of the first "instrument, they wind a thread, for preventing "its pressing further into the eye, than is in-"tended. It is a curious circumstance, that the "opening made through the sclerotic coat, is at "the very point, where it is now made in Europe, "that is, behind the edge of the cornea, and "about, or a little below, the axis of the eye. "When an opening is thus made through the "sclerotic coat, the first instrument is with-"drawn, and the second introduced. This in-"strument may be described as a cylinder, ter-

" minating at one end in a pyramid of three sides,
" with a blunt apex. Between the cylinder and
" pyramid, at their junction, is a neck, or part
" somewhat smaller than the rest. On being
" inserted, it is so managed as to push down the
" lens below the pupil. This is done slowly, but
" effectually, twice or thrice; the operator look-
" ing attentively for a little time afterwards at
" the eye, to be convinced that he has quite
" removed the lens, and placed it below the
" transparent cornea. He then slowly draws
" back the instrument, till he finds that it hangs
" from the narrower portion, or shoulder. In this
" position, it produces no kind of irritation, while
" the strength of the sclerotic coat, keeps it from
" falling out entirely. Both eyes are then covered
" carefully with several round cushions of cotton,
" wetted with water; so that the patient is in
" perfect darkness. With the eyes so covered,
" and with the instrument still in the perforation,
" the head of the patient is allowed to rest on a
" pillow for fifteen minutes, or even half an hour,
" till the spasms that may have been excited in
" the eye have entirely ceased. They are then
" uncovered, and carefully examined. If the

" lens, or any part of it, has risen, it is again de-
" pressed by the second instrument. They are
" a second time bound up as before, for a like
" period of time, and then re-examined, to ascer-
" tain if any further depression is necessary.
" This process is even gone through a third time,
" so that their operation is tedious; it requires a
" long time, but it seems not to give any material
" degree of pain or uneasiness. When, in this
" way, they are quite satisfied that the lens is
" sufficiently removed, they tie the wet cotton
" cushions over both eyes, and put the patient to
" bed. He is kept there, in darkness and repose,
" for about a week, living on little else than
" boiled rice*."

In the letter from Doctor Scott, from which I have already made a quotation, the Doctor makes the following observations :—" In the volume of
" Rhasis, with which you have favoured me, and
" in the part of it you pointed out, the operation
" for depressing the lens is, as you stated, very
" clearly, and minutely detailed. It does not
" seem to me, to differ in any respect, from that

* See the third number of the Journal of Science and the Arts, pages 68, 69.

" of Celsus; but it has none of those circum-
" stances which I have thought so advantageous,
" which distinguish the operation of India. For
" instance, he says nothing of the shape of the
" depressing instrument, which has in the Indian
" mode a little neck, from which it hangs, while
" the eye is bound up till the spasms excited
" in it have gone off. He says nothing of de-
" pressing the lens again, if, after waiting in this
" way, it shall have in any degree arisen. He
" appears, like the moderns, to depress the lens
" with the same instrument, with which he per-
" forates the eye; while the Indians introduce
" another, larger, blunt on all its surfaces, and
" incapable of doing injury, unless its magnitude
" may be thought to be injurious. In short, I can
" easily recognise the operation of the Greeks in
" that of Rhasis, but not in that of India. Last of
" all, Rhasis does not recommend the wet cotton
" cushions which the Indians use, and with
" which I was pleased from their softness, and
" from their excluding light so effectually."

From the great liability, however, of the cataract to rise again, the operation of depression fell into general discredit, and few respectable prac-

titioners could be prevailed upon to perform it, until Mr. Pott, Professor Scarpa, and Mr. Hey's valuable publications in modern times, to a certain degree revived the credit of that operation. The former eminent surgeon first ascertained, by dissection, the power of the vitreous humour to dissolve a cataract when depressed*; and he also was the first person who pointed out that the fragments, when placed in the anterior chamber, become dissolved, and absorbed, without occasioning mischief to the eye†.

* "While I was preparing these sheets for the press, an old "man was taken into St. Bartholomew's, who had a cataract "in one eye, and had by some accident lost the sight of the other. "I couched him; the cataract was as firm as I had ever felt any, "and went down as easily, as immediately, and entirely as possible. "Three days after the operation he was seized with so bad a small-"pox, that he died on the eleventh, and the next day I took his "eye home, and examined it. The cataract lay just below and "behind the uvea, towards the external canthus. It was become "small, irregular, and manifestly in a state of dissolution."—See POTT's Works, Vol. iii. page 159, 160.

† Mr. Pott, after mentioning that he hardly ever knew the mixed species of cataract to fail of being completely dissolved by the aqueous humour, after having turned the point of the needle round and round within the body of the lens, adds—"In "a few instances, where I have had fair opportunity, I have "pushed the firm part through the pupil into the anterior cham-"ber, where it has always gradually, and perfectly dissolved and "disappeared, not producing pain, or trouble, while such disso-"lution was accomplishing."—See POTT's Works, Vol. iii. p. 157.

Professor Scarpa, some years subsequent to the appearance of Mr. Pott's publication on cataract, resided for some length of time in this country. On his return to Pavia, where he filled the professor's chair for many years, with so much honour to himself, and benefit to the science of surgery, being, it is said, dissatisfied with the operation of extracting the cataract, which he had at first practised, he wholly abandoned it in favour of Depression*. Acquainted with the facts just detailed, and published by Mr. Pott, he acted upon them; and

* Mr. Pott's Works, in which the operation of Depression is described, and from which the quotations just made are taken, were first published in 1775, and Professor Scarpa, as I have been informed, was in England about the years 1781 and 1782. I have been induced to affix these dates, in consequence of the following translated passages, taken from a Critique written by Professor Scarpa, on the Description of my Operations for Cataract, and some other Diseases of the Eye, published in 1812, and which were translated into the French language by Professor Maunoir, of Geneva. "With respect to the operation of the cataract, "without doubt, Mr. Adams makes very judicious reflections, "on the wonderful phenomena of the absorption of the capsule, "and crystalline lens, detached from their places; but he has "forgotten to mention, that I was the first, who took advantage "of this phenomenon of the animal economy, for the improve- "ment of the operation for cataract, by depression. I was the "first, who demonstrated, that the solution, and absorption, of "the fragments of the capsule, and crystalline humour, were "more quickly effected in the aqueous humour of the anterior "chamber, than in any other place in the bottom of the eye.

finding, that with a curved needle, which he states became accidentally bent in its passage through the coats of the eye, he was enabled to depress the cataract with more facility, than with a straight one, which he had previously employed, he subsequently adopted it, in preference to the other, and continues still to recommend it.

" Guided by these principles, I was the first, who practised the " placing the fragments of the capsule, and the crystalline, " through the pupil, into the anterior chamber, whenever the " want of solidity in those parts did not admit of their being " removed from the visual axis, and of being permanently re- " tained in the bottom of the eye."

It is a matter of great regret to me, that Professor Scarpa, whose opinions are so deservedly respected throughout the medical world, and whose approbation I should have been so proud to obtain, should have advanced these charges so hastily, for, had he perused the whole of my work, (instead of the mere description of the operations contained in Professor Maunoir's translation), he would have seen, in page 114, that I have not " forgotten to mention" and associate his name, with the practice of effecting the cure of cataract by absorption; not, however, certainly, as being the " *first*" who described and practised it, (that honour belonging, I conceived, to our eminent countryman, Mr. Pott, who shews, by the quotations I have just made from his works, that he was fully aware of the " wonderful phenomena of the " absorption of the capsule, and crystalline lens detached from " their places,") but as having, like Mr. Pott and Mr. Hey, availed himself of one of the most important practical facts, which has been established in modern times, for the improvement of ophthalmic surgery.

The operation of depression, or couching, as it is generally called, consists, in displacing the cataract, below the axis of vision to one side of the pupil, or to the bottom of the eye. Different formed needles have been used for this purpose; but having already, in my work on Diseases of the Eye, described those which are generally employed, I shall not again enumerate them.

The needle (whatever may be its form) is introduced through the sclerotic, and other coats of the eye, a small distance behind the iris, and a little below its central diameter. It is not unusual for authors to mention, that the needle should penetrate the coats, a line behind the junction of the sclerotica, to the transparent cornea*. Having introduced the needle, its point is conveyed to the centre of the cataract, which is then detached from its ciliary connexion, and depressed, as already stated, towards the bottom of the eye, below the axis of vision, or on one side of the pupil. After the cataract is retained in this situation, by the point of the needle for a short time, to prevent its

* This place of junction, by the way, differs so materially in different persons, and I have seen it situated so far forward, that, were this direction punctually observed, the needle would sometimes penetrate before, or through the iris, instead of behind it.

reascension, the instrument is withdrawn, when the operation is concluded, and the patient's sight is immediately restored, the cataract, which impeded the passage of the rays of light to the retina, being thus removed from the axis of vision. From the facility with which the operation is accomplished, the comparatively trifling pain attending it, together with the complete restoration of sight which is effected, when the operation is adroitly performed, those who are unaccustomed to witness its ultimate results, would naturally consider it in the most favourable point of view; the untoward circumstances, however, which frequently ensue, too often disappoint the skilful exertions of the operator, and the anxious hopes, and expectations, of the patient. The degree of favourable consideration which the operation, notwithstanding, at present possesses, and to which the opinions of those able and ingenious authors I have already mentioned, have so materially contributed, I conceive also in a great measure to have arisen from the difficulties and dangers found to be attendant on the operation of extraction, (although said to be so much improved, since its first introduction by Daviel,) but still more, by the solvent powers of

the aqueous, and vitreous humours, having become more generally known, and appreciated.

As Professor Scarpa's writings appear to have principally contributed to the favourable opinion at present entertained of the operation of depression, and as the operation adopted by him scarcely differs from that of Mr. Hey, the Professor's opinions, and practice, are selected as the subjects of the present investigation, being considered to possess more weight, and to be more generally followed, (particularly on the continent,) than those of any person who has written upon the subject. To oppose such high, and justly respected authority, I am fully aware, is incurring no small share of responsibility; but as the object of the present publication is the elucidation of truth, and the improvement of the art, as well as, to explain the foundation of my own opinions and practice, I shall venture to state my objections to depression, trusting to the candour of my readers, that they will believe these objections, are, not the effect, either of hasty prejudice, or the wish to depreciate another practice, in order to establish my own; but the result of inductions founded on facts I have repeatedly witnessed.

In the first place, there is no kind of cataract, the nucleus of which is capable of being divided, that is not much more speedily, and certainly removed by absorption, when placed in the anterior chamber, than when depressed in the vitreous humour. Secondly, when the vitreous humour is in a healthy condition, every depressed cataract is liable, at any time before its dissolution, either to rise, and resume its former situation, or to fall into the anterior chamber of the eye, where, from being undivided, it may occasion great pain and suffering, to the patient, and even hazard the total destruction of the organ. Thirdly, when a hard, and solid cataract, whether its capsule be lacerated or not, is depressed into a disorganized vitreous humour, unless the nucleus be divided, it will remain so long undissolved, as by its weight, and pressure on the retina, frequently to cause gutta serena; or by its rolling about, from the motion of the head, and the continual friction on the retina, or iris, to occasion such severe pains, and inflammation, as to defeat the purpose of the operation, by producing a closure of the pupil, or a suppuration, and sinking of the eye.

The objections made to the operation of de-

pression, by Baron Wenzel, and the other advocates of extraction, are far more numerous; but I confine myself to these, as being founded on facts which have repeatedly occurred, under my own observation, and conceiving, that on investigation, they will be found sufficiently weighty, to establish my objections to the operation of depression. Wounding the sclerotica, choroides, retina, ciliary processes, &c., with the needle, I do not enumerate as objections, being fully convinced, by the most abundant experience, that the important consequences sometimes attached to them, are more imaginary, than real.

First, then, as to the more speedy and *certain** dissolution of the cataract, in the aqueous, than in the vitreous humour, Professor Scarpa has mentioned, and experience has so fully confirmed the fact, that it would be unnecessary to advance any arguments in its support. The learned Professor, however, although he agrees in opinion with Mr. Pott, and Mr. Hey, that the fragments of the cataract, when placed in the anterior chamber,

* I have employed the word "*certain*," because, when the lens is depressed with its capsule entire, which frequently cannot be prevented, it will remain undissolved for a great number of years.

do not excite pain or inflammation, as is asserted by the advocates of the anterior operation of Conradi, nevertheless, in all cases, prefers depression, when the solidity of the cataract admits of this operation. If, however, one of the chief excellencies of depression, as recommended by himself, consists in the removal of the cataract by its becoming dissolved, and absorbed, is it not preferable, in every case where this can be done with safety, namely, when its nucleus can be divided, by placing a part or the whole of it in the anterior chamber of the eye, to expose it to a menstruum, which possesses the solvent power in nearly a ten-fold degree to that of the vitreous humour, rather, than by depressing it in the latter body, to hazard its reascension, or its producing gutta serena, or destructive inflammation; all which results, it will be presently shewn, are frequent attendants on the operation of depression? But the Professor's directions are decisive, in regard to the depression of every lenticular cataract, the solidity of which admits of its performance, and only to place in the anterior chamber, such fragments of the capsule, or the soft cataract, as become separated

under the action of the needle. Membraneous (capsular) cataracts alone, he says, do not admit of depression, and therefore, of necessity, he pushes them through the pupil, into the anterior chamber.

The principle, and practice, of only pushing into the anterior chamber, those fragments of cataract which he is unable to depress, thereby shewing a marked preference to the latter operation, is decidedly objectionable; and the Professor's predilection for depression, is rather in opposition to the doctrine he maintains, of the greater rapidity, with which the cataract dissolves in the anterior chamber, than when it is depressed in the vitreous humour, which doctrine, when acted upon, necessarily exempts the patient from the ill effects, to which depression, it will be hereafter seen, is liable.

In the operation for membraneous, or capsular cataract, whether of the congenital kind, or existing after the removal of the lens by depression, or extraction, Professor Scarpa recommends the capsule to be freely lacerated with his curved pointed needle, to the full extent of the pupil, and to place the fragments into the anterior chamber,

for solution, and absorption; as, he remarks, it is of no use to depress them in the vitreous humour, from the certainty of their rising again, and obstructing the pupil as much as ever.

This free laceration of the capsule, I can positively affirm, in a great number of instances, cannot be accomplished, having found it become separated from the ciliary processes, and even from the iris, when adherent to it, before the division could be effected, although I employed either the two-edged sharp cutting needle, or the iris scalpel, both of which instruments are evidently better calculated to divide the thickened capsule, than the Professor's blunt, curved pointed needle. At the commencement of my practice, when I pursued that, recommended by him in this species of case, I repeatedly failed in effecting the proposed division, and, therefore, was necessitated to place the thickened capsule, whole, and undivided into the anterior chamber, where it remained a very long time undissolved, and occasioned considerable pain, and inconvenience to the patient. A case of this kind, is related in my work on Diseases of the Eye, in which, being unable to divide the dense, and thickened capsule, I pushed it whole

into the anterior chamber, where it contracted an adhesion, to the inner surface of the cornea, immediately opposite the pupil, which obscured the patient's vision, in so great a degree, as to occasion the necessity, at the expiration of twelve months, of another operation to detach it. After the capsule was liberated, the patient was restored to sight, but still it excited for some time, considerable pain and inconvenience, by its friction against the iris, and, even at present, some part of it remains, and has again contracted a new adhesion, in a situation where it materially intercepts the rays of light, although it is more than six years, since the first operation was performed.

In this species of case, it has been usual with me during the last five or six years, when the capsule has been thin, freely to lacerate it to the full extent of the pupil, when dilated by the belladonna, and to suffer it to remain attached to the ciliary processes, which occasions no impediment to vision on the return of the pupil to its natural size; but when the capsule has been thickened, on the contrary, I have placed it out of the axis of vision, either below, or on one side of the pupil; and this has been attended with

the happiest results; for, by leaving a small part of it still attached to the ciliary processes, it is thereby prevented from floating about; by degrees it contracts itself into a small knob, and, in all probability, eventually becomes absorbed; or, if not, it in no respect impedes the passage of light, as it is not visible, even though the pupil be in a considerable degree dilated.

My second objection to depression, namely, the liability of the lens to reascend when depressed, is a fact universally known and admitted, by the earliest writers on the subject down to the present time; and must necessarily frequently result, from the great elasticity, and firmness, which the vitreous humour possesses when in a healthy state, and which there are sometimes opportunities of observing, in extracting the cataract.

The vitreous body, when in a healthy state, it should be recollected, is composed of a series of cells, containing a very pellucid liquid, resembling the aqueous humour. These cells, are formed by processes, arising from the interior surface of the vitreous tunic, which crossing each other, constitute innumerable small compartments, not distinctly separate, which, when filled with the

vitreous fluid, form a body of considerable elasticity*. The process of the vitreous tunic enveloping the vitreous body, is so strong as to give it a degree of firmness, which admits even of its rolling about on a table, without separation, when taken by dissection in a healthy state from a recent eye. What then must be the effect of mechanically forcing an undivided, hard, and solid lens into the substance of this body? Evidently, to compress its cells; the elasticity of which will continually act like a pressed spring upon the cataract, and thereby strongly incline it, to return to its natural situation.

This degree of firmness was very remarkable in the case of John Ford, one of the Greenwich pensioners†: the muscles of the eye having been called forcibly into action after the section of the cornea was completed, a part of the vitreous humour was forced out, through the section, which plugged it open as wide as the division of the cornea admitted. The protrusion, on examination, felt quite

* See the chapter entitled Fabrica cellulosa Humoris vitrei, in Zinn's Descriptio Anatomica Oculi Humani, page 107.

† This was the only case, in which failure attended my operations, in the number of pensioners, officially reported upon to the Directors, by the Medical Officers of Greenwich Hospital.

firm to the touch, and it appeared as solid as the vitreous humour, taken from the eye of a sheep, recently killed. In another instance, where I extracted the cataract, in the most perfect, and satisfactory manner, in the presence of Professor Asselini, and after the eye was bound up, the patient, who was an exceedingly irritable, elderly lady, in her way from the window, to the bed, exerted the muscles of the eye, with so much violence, as also to force out a large portion of the vitreous humour, through the section of the cornea, which was precisely as solid, as in the former case, and, like it, prevented the closure of the section of the cornea, for some weeks, and eventually caused a failure of the operation. This state of firmness, and consequent elasticity, of the vitreous humour, is conceived to be the healthy state of that body, when, it is evident, that there must be the strongest disposition, to a return of a crystalline lens, which has been depressed in it. In several instances of elastic cataract, during my attempts to divide the capsule, which had become thickened and very tough, it has been forced deeply into the substance of the vitreous humour; but, as soon as the pressure of the needle was

withdrawn, has instantly returned to its natural situation. It will, perhaps, be said, that this effect was produced by the elasticity of the capsule, or the firm union, usually existing between the capsule, and the ciliary processes, rather, than by any peculiarity, in the consistence of the vitreous humour; but this cannot be so, the capsule in such cases being perfectly inelastic, and greatly thickened; and, when I have had to extract, floating, and detached portions of it, they have appeared very similar to parchment: the connexion, also, between the circumference of the capsule, and the ciliary processes, at the upper part of the eye, must have been completely separated, to admit of the temporary depression of the opake body, below the pupil, as it were into the very centre of the vitreous humour.

The late Mr. Gibson supposed, that this phenomenon was occasioned, by the cataracts being so firmly attached to the anterior part, of the vitreous humour, by the processes of the tunica aranea, which unites the crystalline lens, to that body, that, in forcing down the cataract, the vitreous humour went with it, forming, as it were, part of a revolution of a spherical body, which, how-

ever, again returned to its natural situation, on the pressure being withdrawn. This opinion is certainly erroneous, for, in my attempts, to cut the thickened capsule in halves, I have often forced it out of sight, and apparently into the very centre of the vitreous humour, without giving the latter body, the least of that rolling motion, described by Mr. Gibson; yet, the moment the pressure of the needle was withdrawn, the capsule has instantly sprung into its natural situation, as if pulled up by a spring. From the depth to which I carried it with my needle, I am quite certain the capsule was completely separated from the ciliary processes; the elasticity, then, must have resided in the vitreous humour, and it is probable, in such cases, (although it is necessarily offered only as a conjecture,) that the portion of the tunica aranea, surrounding the vitreous body, is not ruptured, but is driven in, by the force of the needle, before the cataract, which, increasing the resisting power, assists in occasioning its sudden and instantaneous return.

Indeed, if it be not the elastic property of the vitreous cells, which causes the return of the cata-

ract, to its natural situation after being depressed, it would be difficult in many instances, to account for its doing so; because, the opake crystalline, being specifically heavier, than an equal volume of vitreous humour, when in its most healthy state*, it would never mount in opposition to its own gravity, were it not acted upon by some propelling power.

It has been the opinion of some respectable writers upon cataract, that the action of the muscles of the eye, conduce to the return of the cataract; but if, as has been observed, the change in the length of the visual axis, if it hap-

* " Il a (le cristallin) cela de particulier que les particules " qui le composent sont si pressées les unes contre les autres, " qu'il est un des corps les plus pesans qui se rencontrent dans " l'homme, et dans les autres animaux à proportion de son " volume; comme on le connoit lorsqu'on le plonge dans un " verre plein d'eau au fond duquel il se précipite aussi " promptement que feroit une pierre. J'en ai même plongé " dans l'esprit de vitriol, et dans l'eau-forte qui sont les liqueurs " les plus pesantes que je connoisse et il s'y est précipité " également.

" Je dirai à l'occasion de la pesanteur du cristallin, que le " corps vitré n'est pas à beaucoup près si pesant, car si on le " plonge dans de l'eau, il y flote à peu près comme fait la " cire: ce qui fait connoître que son volume pese aussi à peu " près comme un semblable volume d'eau."—Vide *Traite des Maladies de l'Œil, par M. Antoine Maître-Jan*, p. 42.

pens at all, cannot exceed the one eight-hundredth part of an inch, the very little degree of compression of the globe, which the muscles of the eye are capable of exerting, is apparent, as well as, the impossibility of such an event being brought about, by this cause; while the *percussion* also, from any sudden action of the muscles of the eye, must necessarily be so slight, as to be wholly insufficient to account for the phenomenon in question. That this power, then, of again forcing up the cataract into its situation, after it has been depressed, depends upon the solid consistence of the vitreous humour, which, from its structure, is evidently calculated to produce such an effect, may, I think, be inferred from the fact, of the spontaneous depression of the lens, as soon as it is liberated, from its natural adhesions, when the vitreous humour is fluid. The partial depression of the lens, which takes place, when the vitreous humour is partly disorganized, and which, in such cases, never returns, still further tends to confirm my opinion of its propelling power, when in a healthy state.

The return of the cataract to its natural situation, as already observed, not unfrequently

happens, as soon as the needle is withdrawn from the eye*; at other times, months, and even years, elapse before this happens, if, either from its great hardness, and insolubility, it remains unabsorbed, or that the capsule of the lens has not been ruptured. Numerous instances of this kind, are upon record, and the liability of the return of the cataract is mentioned, by almost every author, from the time of Celsus, down to the present period. Celsus says†, "If it rises again, it "must be more cut with the same needle, and "divided into small pieces, which, when sepa- "rate, are both more easily lodged, and give "less obstruction‡." Janin mentions a case,

* Sharp relates a case, "when, upon the first attempt to de- "press the cataract, it suddenly sprung up, and made its way "into the anterior chamber, where, in ten days, it became dis- "solved, and the patient saw extremely well." I do not think that this was a case of elastic cataract, as I never knew it to pass through the pupil on reascending, nor, if it were to do so, would it dissolve in ten days, it being usually composed of an exceedingly dense and thickened capsule, containing some portions of lens, which capsule, would not become dissolved and absorbed under a very long time.

† See Greaves's Translation of Celsus.

‡ St. Yves mentions the case of a priest, upon whom M. Petit had performed the operation of depression "some years" before he was called upon to extract the cataract which had risen from some cause, and passed into the anterior chamber.

where a lens had been depressed, and rose again two years after the operation, and made its way into the anterior chamber, from whence he extracted it. Mr. Hey relates a similar case in an old man, where so much inflammation of the eye was produced by its return, that it rendered any attempt to perform another operation of no avail, and the eye was consequently lost. Richter mentions two cases, (one in his work on Extracting of the Cataract, the other in his second Fasciculus,) where a cataract returned, after having been depressed two years in the first instance, and ten in the other. Warner relates a case where it returned, and required his repeating the operation four times. Benjamin Bell says, he has "frequently known" a *second* or *third* operation succeed "after the cataract had again got into "its situation." In an experiment tried on the invalided seamen in Paris, in 1753, to ascertain the comparative success of extraction, and depression, six cases were operated upon, by Morand, by depression, three of which returned to their former situation, and vision was again lost*.

* It is a singular coincidence, that the invalided seamen in Paris, should have been fixed upon by official authority as subjects of operation, for the purpose of ascertaining the comparative

Heister says, " No surgeon can assert, that the " cataract shall continue suppressed after the " first time of couching; but the patient has " this advantage, that if it ascends, it may be " again suppressed, and his sight recovered by " the operation; accordingly, Maître-Jan writes, " that a patient, whom he couched in autumn, " had a return of his cataract in the spring " following; but it was happily removed again " by repeating the operation. We have even " seen some instances of the cataracts having " subsided again of themselves, after they had " risen above the pupil*."

Professor Scarpa, however, in his work on Diseases of the Eye, positively denies that a cataract at any time reascends, when depressed, according to the mode which he recommends, and subsequently, in the critique upon my operations, already mentioned, he asserts, that it is " inexperienced oculists only, who have mis- " taken a secondary membraneous cataract, for

superiority, and success of the old operation, of depression, and the then new operation of extraction, and that the invalided seamen of this country, should have been the class of patients now selected, for a comparative trial of that very operation, with the new and improved series I have introduced into practice.

* See Heister's Surgery, p. 413.

" a reascended lens." One case, notwithstanding, which he himself relates, in his work on Diseases of the Eye, appears rather at variance, with these opinions, and, from the statement made to me by Mr. Este, surgeon of the 1st Life-Guards, (who studied under him at Pavia, between the years 1792 and 1797,) and since transmitted to me in a letter, containing the following extract, it would seem that a reascended lens, during that period, was an event not very unusual in the Professor's own practice.

" Professor Scarpa was a warm advocate for
" the depression of the cataract, in opposition to
" *Richter*, whose doctrines were then spreading
" over Germany, and who was at that period
" the great patron of extraction. *Scarpa* merely
" depressed or couched; I never saw him divide
" the cataract, as you do, to hasten its absorp-
" tion. Although he was generally successful,
" I recollect that, after three of his operations,
" the cataract returned to its place, from whence
" it was afterwards dislodged, by a second intro-
" duction of the needle. To prevent such
" occurrence, he strongly inculcated to his pupils
" the necessity of propelling, as it were, the

" vitreous humour, with the flat surface of his " instrument, into the place the cataract had " occupied prior to depression. He frequently " detached, and introduced into the anterior " chamber of the eye, opake pieces of the " capsule, stating, that such pieces so introduced " would speedily disappear or dissolve, as he " expressed it, in the aqueous humour; but I " never saw him divide or break the cataract " itself, nor did he ever, during the period before " mentioned, (between the years 1792 and 1797,) " suggest the expediency, of passing the lens so " divided, into the anterior chamber, according to " your modes of operating."

In Case LIII. just alluded to, and published in his valuable work on Diseases of the Eye, Professor Scarpa relates, his having successfully depressed, a cataract " somewhat soft," so that it required " some care to remove it from the " axis of vision," in a patient who had " almost " the largest anterior chamber he ever saw." On examining the eye on the eleventh day, he found " more than half the pupil occupied by " a whitish irregular body." This, he supposes, was the capsule, which had become detached

during the operation, and had reascended; but, as the Professor states, it was "the size of "a barley-corn," it was much more probably a portion of the "soft crystalline," which had required "some care" to depress, that had separated, by the action of the needle. Whatever it might be, it however required a second operation, when the learned Professor placed it in the anterior chamber, where it dissolved in twenty-five days.

Is it not more than probable, that, if this "somewhat soft crystalline," requiring "some "care to be depressed," had been divided, and the separated portions afterwards placed in the anterior chamber, which "was almost the largest "Professor Scarpa ever saw," a second operation would have been unnecessary; as, by subsequently attending to the free detaching of the capsule around its circumference, after the divided lens is placed in the anterior chamber, as recommended in my work on Diseases of the Eye, a second operation is rarely required, when that cavity, is sufficiently large to receive the whole, or the greatest part of the cataract?

The advocates of Professor Scarpa's opinions,

will naturally inquire, whether, in all the cases detailed, of the return of the cataract after depression, the rules laid down by that eminent surgeon were observed in their performance?

To this I will reply, that in whatever situation of the eye the cataract may be placed, or in whatever manner the operation of depression may be performed, still, if my opinion be correct, that the vitreous humour frequently possesses the firmness I have described, it will follow that the elasticity of its cells, when compressed by the cataract, will, by continually acting upon this extraneous body, not only strongly tend, but, in many instances, necessarily occasion, its return.

Professor Scarpa, in his work on Diseases of the Eye, appears to lay great stress on lacerating the capsule, and adduces the three following instances in support of his opinion, of the certainty of the gradual dissolution of the cataract, when afterwards depressed in the vitreous humour. "The first was in a nobleman of Pavia, aged "sixty, who died precisely a year after he had "undergone the operation of couching for a "cataract in the right eye; the other was in

" a woman, forty-three years of age, who died " three years after the depression of the cataract; " and the third, in a woman fifty-seven years of " age, who died about three years and a half " after the same operation had been performed. " In the first of these three subjects, I found the " crystalline deeply imbedded in the vitreous " humour, and reduced to about one-third of its " natural size; and in the other two, in which the " crystalline was deeply situated in the vitreous " humour, below the axis of vision, there was " only the nucleus remaining, of a size little " larger than the head of a common pin*."

I fully concur in opinion with Professor Scarpa, that the lens, when divested of its capsule, will dissolve, after depression in the vitreous humour, (provided, however, it does not previously rise again, and that it remains at the bottom of the eye without doing mischief,) but at the same time I am convinced, that the free laceration of the capsule, recommended by him, cannot be always effected in a healthy capsule†, and

* See Scarpa on Diseases of the Eye, page 362.

† Richter says, " It is not easy to conceive, that the couching-" needle is always made to pass into the body of the lens, and

very rarely indeed in one which is thickened and diseased. On these points I can speak confidently, having been repeatedly disappointed in my attempts to open the capsule, even with the artificial pupil knife*, which, from its sharp edge, and when used with a saw-like motion, is

" 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 pe- " netrate 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 circum- " stance gives one advantage to couching over extraction." See RICHTER *on Cataract*, p. 142.

* It has happened to me in different instances, in operating for artificial pupil, where the capsule of the opake crystalline has been much thickened by disease, that it has separated with the lens, and become spontaneously, and partially depressed, (the vitreous humour being partly disorganized,) without my being able to open it, notwithstanding I had previously experienced no difficulty in dividing the iris with the same instrument with which I afterwards ineffectually attempted to open the capsule, thereby proving its extreme density, and how utterly impossible it would be, to accomplish the proposed object with such a needle as that employed by Professor Scarpa. In one instance of this kind, which occurred five years since, the cataract is still floating immediately below the edge of the artificial pupil, as perfectly unchanged in size or colour as within the first week. As the patient, a lady who had been blind for upwards of twenty years in this eye, previously to my operating upon her, can see to read the smallest print for hours

evidently much better adapted for such an operation than the Professor's blunt curved pointed needle; and I feel equally confident, that the cataract, unless its capsule be freely lacerated, will remain frequently for many years undissolved*.

De Gravers fully confirms these opinions in the following passage:—" Before we wind up this

together, or to execute the finest work with the assistance of cataract spectacles, I have taken no measures to extract this cataract, which I should attempt, were it necessary; as, from the thickness of the capsule, and the probable hardness of the lens, it would be difficult, if not impossible, to effect its absorption; and, were I to depress it, would surely rise again, as it floats up and down (even near to the upper margin of the pupil) from every motion of the head, which obliges the patient to hold any thing which she wishes to view accurately, nearly on a line with the eye, instead of placing the object considerably below it, as is usually done.

* I have lately met with a very singular case in a young lady who was born with cataracts, which spontaneously separated from their adhesions, while she was a child, and were observed floating up and down behind the pupil. They have sunk below the pupils, yet are still plainly to be seen, although she is now nearly twenty years of age. In this instance, the cataracts must have been either fluid, or very soft; and, in addition, from the moving of the iris, backwards, and forwards, there is the greatest reason to believe that the vitreous humour is also fluid, yet, from the capsule being entire, it has resisted its action for so many years, and still floats up, and down, at every motion of the eye.

" paragraph, I think it will not be improper to " remark, that a cataract couched to the bottom " of the globe does not dissolve, as has been " thought by many writers. In the support of " this opinion I have several instances, three of " which, nobody who reads the Medical and " Chirurgical Journals for these twenty years " last past will doubt. Three persons, at dif- " ferent times, died in the hospitals of Paris; " they were remarked by the students, and " their eyes opened before a numerous assem- " bly, who all saw the opake bodies adherent " to the bottom of the globe, though lodged there " for seven years in the first, thirteen in the " second, and seventeen in the last. However, " I must observe here, that its dissolution will " certainly take place if the crystalloida (the " capsula propria,) is properly torn *."

The cases, where the operation of lacerating a healthy capsule would the most certainly fail, are, where the attachment between the capsule, and the ciliary processes, is morbidly slight, or where the vitreous humour is wholly disorganized. In either case, the most delicate touch with the

* See De Gravers, on Diseases of the Eye and Ear, page 105.

needle will generally separate the lens, from its ciliary attachment, before it is possible to open, or divide, the capsule, when the operator has no alternative left, but either, to bring it whole into the anterior chamber, or to depress it.

The attachment of the capsule to the ciliary processes, is always comparatively slight, the chief counter resistance to the central division of the cataract with the needle, being, the vitreous humour, and it is not a very uncommon occurrence, to find a separation of the capsule, from its ciliary attachment, caused by accidents, such as a blow upon the eye, a fall from any considerable height, &c. A disease of the ciliary processes themselves, will also produce this separation, when the crystalline lens, which is then generally opake, will either fall into the anterior chamber, or press upon the posterior part of the iris, if the vitreous humour is in a healthy state; or, when this is disorganized, will become spontaneously depressed to the bottom of the eye.

This morbid change of the vitreous humour, I have found infinitely more frequent, particularly in old persons, than there was reason to suppose, from what has been written on the subject.

Among the Greenwich pensioners, in no less than fourteen cases out of thirty-one, it was either in part, or wholly disorganized.

From what has been already said of this disorganized state of the vitreous humour, it necessarily results, that the consequences described in my *third*, and last objection to depression, are to be expected, whenever a solid and undivided lens, is depressed, in a vitreous humour entirely fluid; in which case, the tunica aranea being disorganized, the whole of that part of the eye, which is naturally occupied by vitreous humour, is filled with the same sort of fluid, as that, which occupies the anterior, and posterior chambers, of the eye. In short, it is aqueous, instead of vitreous humour. From the superior gravity of the opake lens, it therefore sinks immediately to the bottom of the eye, on being detached from the ciliary processes, like a stone thrown into water, there being no tunica aranea to assist, as is naturally the case, in securing it in its situation: it cannot, therefore, rise again, for the reason which causes its immediate and spontaneous depression, but, as it sinks down upon the retina, without its weight being in the least degree supported by the intersections

of the vitreous tunic, which forms the vitreous cells, the pressure of this solid extraneous body upon the retina, or the degree of friction occasioned by its rolling about, from the different motions of the head, will generally, either produce gutta serena, or the most severe pain, and inflammation, which ultimately terminate in closed pupil, or a total suppuration of the eye.

In this state of the vitreous humour, it matters little, whether the capsule is ruptured during the operation, or not, for the mischief will be done, long before a solid, undivided lens, can be absorbed, even were it entirely denuded of its capsule. Whoever has seen its effects, when suffered to remain in the anterior chamber, where absorption proceeds so much more rapidly, than in the vitreous humour, without its nucleus being divided, (in which case it will sometimes produce ulceration of the internal part of that dense and insensible coat, the transparent cornea, and a consequent destruction of the organ, as well as the most distressing pains of the eye and head, by its pressure, and friction upon the iris,) can readily imagine, how much more certainly, inflammation, and ulceration of the

retina, must follow, when the undivided lens is depressed in a fluid vitreous humour, and is consequently, lodged upon that exceedingly delicate membrane, in which the seat of vision resides. This, I conceive, accounts for the acute pains which have been mentioned by the most respectable authors, as frequently resulting from the operation of depression*; which pains, accompanied by inflammation, and terminating in gutta serena, I have myself witnessed, where the cataract has been depressed without division in the vitreous humour, when it is in a state of dissolution.

De Wenzel says, " Those persons, who have " undergone the operation of couching, some- " times feel constant and violent pains in the eye " as long as they live. These pains are probably " occasioned by the injury which the retina sus- " tains, in consequence of the pressure between " the choroides, and the depressed crystalline. " I have had an opportunity of dissecting, and " examining the eyes, of two women after their " decease, who suffered incessant pain from the

* Heister says, that he saw in " several different places many " miserable objects in tormenting pain, arising from inflamma- " tion, consequent upon the operation of depression."

" time of the operation; and, in both these cases, " the depressed crystalline was deposited on the " retina, in the way I have mentioned."

" Daviel also observed, in a case where he dis- " sected the eye after depression, the retina and " choroides torn or ulcerated at the part where " the lens was lodged at the bottom of the eye *."

It often happens, that in the same patient, the cataract is hard in one eye, and soft in the other; and I have reason also to believe, that the vitreous humour is sometimes much more firm in one eye, than in the other. In some instances, it has occurred to me, when I have in one eye removed a cataract by extraction, or placed it in the anterior chamber for absorption, that the lens in the other, has (contrary to my wish and intention) become spontaneously depressed, at the first touch of my needle, and the vision of the eye, which was thus immediately obtained, has been again lost from gutta serena, or subsequent inflammation, which commenced some weeks, or even months, after the cure was considered complete †;

* See Ware's Translation of De Wenzel, p. 32.

† It may be said, that what I have here stated is an argument against my mode of operating in these cases, but it will be hereafter seen, that a total destruction of the eye is almost inevitable, when extraction is performed in the usual manner.

whereas, in the other eye, where extraction was performed, or its absorption effected, the result has been permanently successful. It is also worthy of remark, that, in the greater number of instances, these unfavourable occurrences took place, some considerable time after the patients had returned home, and were supposed cured.

The important question then presents itself, whether, under any circumstances, depression is likely to prove permanently beneficial, in cases of disorganized vitreous humour? In my opinion, unless the nucleus of a hard and solid lens be divided, it is not safe, under *any* circumstances, to depress it*; merely rupturing the capsule, or

* It is but candid, however, to state the case of a gentleman, upon whom I operated upwards of two years since, who had been born with slate-coloured cataracts, with transparent edges; he was always supposed to be near-sighted, until, at the age of sixty, the edge becoming opake, he nearly lost the indifferent sight he had previously enjoyed. It was then ascertained that he had cataracts, and he applied to me for their removal. I found the cornea remarkably small, and the aperture of the pupil, instead of being round, was oblong, and the lower part of its margin altogether wanting, so that the circle of the iris was interrupted, the pupil being the shape of an O, with its inferior segment cut off. From the vacillating motion of the iris before the operation, I expected to find the vitreous humour disorganized, and it proved to be so, as, the moment I touched the lens with my needle, although in the most cautious and delicate manner, it became immediately

even altogether separating it from the lens, in the great majority of instances, it has been, I think, clearly shewn, will not prevent the dangerous consequences to be dreaded.

When, however, the cataract admits of being freely divided *, which I have not unfrequently

depressed. No bad symptoms have since occurred; but, though the operation has been performed upwards of two years, the lens does not appear diminished. The only inconvenience, however, experienced, is, that on the patient holding down his head, (to tie his shoe, for instance,) the cataract rolls forward, and so entirely obstructs the pupil, that he is unable to see any thing until he raises, and throws back his head, so as to remove the cataract to the back part of the eye.

Mr. Pott mentions a similar case to this, in a woman on whom he operated. Were the pupil, in either of these instances, large enough to admit of the passage of the cataract, there evidently would be nothing to prevent its passing into the anterior chamber of the eye.

* While at Exeter, I operated upon a gentleman eighty years old, in whom, upon my dividing the cataract, the pupil became immediately clear, the fragments having spontaneously disappeared. The following morning, he could see the minutest objects; and, at the end of a week, there was no vestige remaining either of the cataract or operation.—Another instance of this kind occurred in a young man about thirty years of age, on whom I operated last March. He was born with cataracts. In one eye he had never seen more than to distinguish betwixt colours, and perceive light from darkness. The fragments of the cataract having spontaneously become depressed, immediately on dividing the lens, he instantly saw light much more strongly than he had done before. On the

effected with my sharp cutting, two-edged needle, this fluid state of the vitreous humour is conducive to the most brilliant, and successful results, which can occur in the operation of depression. In such cases, from the free division of the cataract, the separated portions not only dissolve in an infinitely less time, than were it depressed without such a division, but its pressure, and friction, upon the retina, being thereby prevented, no inflammation, or gutta serena, will occur. Indeed, in some instances of this kind, I have observed the fragments of a cataract thus divided, floating about in the vitreous humour, previously to their solution, and absorption, immediately beneath the axis of vision, and in none have I witnessed the ill effects, described, as generally attendant on the depression of an undivided lens.

Upon the whole, then, it appears to me, that the chief recommendation of depression, consists, in the entire disappearance of the cataract, by its becoming dissolved, and absorbed; but, that

following day, he saw all the objects around him, and at the expiration of a fortnight, when the eye had recovered itself, he could, with the assistance of glasses, distinctly discriminate the minutest objects, even the minute and second marks on my watch-dial.

when depressed, without its capsule being ruptured, it will (as is proved by undeniable facts and authorities) remain for any number of years without dissolving, during which period it is liable to return into its situation, and thereby again cause blindness; or to pass through the pupil into the anterior chamber, where, if not extracted by another operation, it will occasion the most severe, and acute sufferings, and the ultimate destruction of the eye ;—or else, in cases of disorganized vitreous humour (which disorganization may also take place at any period, however remote from the operation, previous to the solution and absorption of the cataract,) it will press upon the retina, and cause gutta serena, or by its rolling about at the bottom of the eye, and causing continued friction, will produce violent inflammation, and thereby occasion a closure of the pupil, or the total destruction of the organ. Hence then it becomes a desideratum of great importance to those afflicted with cataract, that operations should be devised, by which these dangers may be avoided.

As the removal of cataract, by causing its absorption in the aqueous humour, exempts the

patient from all the dangers I have enumerated as attendant on depression, it is obvious that practice should be always followed in preference to depression, whenever it can be accomplished with safety, and without the risk of exposing the organ to dangerous inflammation. This can be always effected, whatever may be the age of the patient, when the consistence of the cataract admits of its nucleus being freely divided. But in cases where the lens is so hard as to resist division, I do not now, as formerly, (and as I have recommended in my work on Diseases of the Eye,) subject my patient to the chance of repeated operations, but I at once extract it. This, however, is done by an operation totally different from that, which is generally practised; an operation which combines advantages hitherto considered unattainable, and is at the same time exempt from most of the dangers, which render the success of the usual mode of extraction, however ably performed, so very precarious. One great advantage of this new method of extraction is, (as will be hereafter shewn,) that it affords the operator the opportunity of ascertaining with certainty, whether the nucleus of the cataract

admits of division, which, if found practicable, leads to the adoption of my practice of at once dividing the nucleus of the lens, and placing its fragments in the anterior chamber of the eye for solution and absorption; but if the nucleus prove too solid, it is to be conveyed undivided through the pupil with the point of the needle, into the anterior chamber, and afterwards immediately extracted.

By this adaptation of operations to the different consistences of the cataract, not only is the liability of its reascension, when depressed in a healthy vitreous humour, wholly avoided, but also the severe pain and suffering, terminating in gutta serena, closed pupil, or a total destruction of the organ, which almost invariably result, from the depression of a solid undivided cataract, in a disorganized vitreous humour.

CHAPTER III.

History and Nature of Extraction.

Sect. I.

THE operation of depression, as I have mentioned, in the preceding part of this work, having, from its painful consequences, and numerous failures, been in general given up by respectable practitioners, chiefly fell into the hands of ignorant itinerants; who, from their wandering mode of life, as well as their ignorance of the general principles of their art, necessarily operated, without taking any measures, either, to prepare their patients, or, to relieve any of the consequent symptoms, which frequently result from the operation, and by their eventual ill success, added to the discredit previously thrown upon depression, in the opinion of the public.

Early in the commencement of the eighteenth century, a cataract having accidentally fallen through the pupil of a patient, into the anterior

chamber, where it produced a great deal of irritation and pain, it was extracted by St. Yves; and in the following year, 1708, another operation of a similar kind, was performed by John Petit. It has been generally supposed, that these are the first cases of extraction which have ever been performed, but this opinion appears to be erroneous, as the extraction of the cataract was known and practised by the ancients, as will be seen by the following quotations:

Pliny, the naturalist, says—"Squammam in "oculis emovendam potius quàm extrahendam*."

Continens Rhasis, who lived in the eighth century of the Christian era, observes—"Et aliqui "aperuerunt sub pupilla, extraxerunt cataractam; "potest esse cum cataracta est subtilis; cum est "grossa non potesit extrahi; quia humor egre- "deretur cum ea. Et aliqui loco instrumenti, "posuerunt concilum vitreum; sugendo eam "suxerunt albugineum cum ea†."

* Plin. Nat. Hist. lib. 29. cap. 1. page 497.—Holland, the translator of Pliny, gives this passage in the following words: "That a cataract or pearle in the eye, is to be couched "rather, and driven down by the needle, than quite to be "plucked forth."—See Holland's Translation, book 29, page 348.

† See Continens Rhasis, liber secundus, page 51.

Avicenna, who wrote near the time of Rhasis, when speaking on the subject of cataract, says—

" Et homines quidem habent vias diversas in " exercendo curam aquæ*, quæ sit cum instru- " mento, ita ut quidam sint qui disrumpunt infe- " riorem partem corneæ: et extrahunt aquam per " eam; et hoc est in quo est timor; quoniam " cum aqua, quando est grossa egreditur albu- " gineus†."

From additional information politely afforded me by Doctor Scott, it would seem, that the native practitioners in India, are not only acquainted with the operation of depression, which they frequently perform, but also with that of extraction. One of their operators described it to him; and from his description, the operation appeared very similar to that which is generally performed.

The ancients, however, although they evidently knew, and practised the operation in question, yet appear not to have generally adopted it, from the fear of the vitreous humour escaping with the cataract; a fact, which the experience of modern

* Cataract is called *aqua* et *gutta obscura*, by the Arabian physicians.

† Avicenna, lib. 3, fer. 4, tract 1, page 566.

practitioners has heretofore but too fully confirmed; and their knowledge of it, had certainly no influence in bringing it into practice in modern times. Notwithstanding the two cases already related, which occurred to St. Yves, and Petit, and a third to the former, seven or eight years afterwards, it was not until the year 1752 that these facts were employed, so as to produce any extensive, practical good. At this period, Daviel commenced performing the new operation of extraction, instead of that of depression, and with such a degree of success, comparatively to that obtained from the latter operation, that as soon as his method was known, extraction was very generally adopted. His mode of conducting it, was however objected to, from the multiplicity of instruments which he employed; and after various modifications, made by different practitioners, both in the operation, and the instruments, it was reduced by Wenzel, and Richter, to that which is now commonly practised. I shall copy the judicious, and connected description given of it, in a treatise written upon cataract, by the late Mr. Wathen, whose reputation, and eminence in his profession, is, doubtless, well known to my English readers;

and shall immediately afterwards describe, and also give a short history, of the adoption of a new, and improved method of extraction, which I have substituted in its stead, in cases where the nucleus of the opaque lens, is too hard to admit of an immediate division; it being my intention (in the same manner as in regard to the operation of depression) subsequently to point out the dangers attendant on the old method of performing extraction, and the means by which these dangers may be avoided.

Mr. Wathen's description of extraction begins as follows:—

"The room in which the operation is to be "performed, should have a clear light; without "admitting the direct rays of the sun. The "patient is to be seated in a low chair, with "his head reclined on a pillow, and held by an "assistant, in such a position that the eye to be "operated on, may be nearer to the light, than "the other. The operator must be seated a little "higher than the patient, directly before, and as "near as possible to him; even upon his knees, "if he be much taller than himself.

"Thus most conveniently situated for operating,

" he is then to place the fore and middle finger of " his left hand upon the tunica conjunctiva, just " below, and a little on the inside of the cornea. " At the same time, the assistant who supports " the head, must apply one, or, if the eye projects " sufficiently, two of his fingers upon the con- " junctiva, somewhat on the outside of, and above " the cornea. The fingers of the operator, and " assistant, thus opposed to each other, will make " an oblique counter pressure upon the globe, so " as to fix the eye, and prevent the lids from " closing. The point of the knife, which is to be " held in the right hand, as the eye here sup- " posed to be operated on is the left, is to enter " the cornea on the side next the lesser angle of " the eye, about one tenth of an inch above its " transverse diameter, and a little anterior to its " connexion with the sclerotica. The knife thus " introduced, is to be pushed on slowly, but " steadily, without the least intermission, in a " straight direction, with its blade parallel to the " iris; so as to pierce the cornea towards the " inner angle of the eye, on the side opposite " to that which it first entered, till one third part " of it is seen to emerge beyond the inner

" margin of the cornea, and the point of the
" knife approaches the commissure of the eye-lids,
" in the greater angle of the eye. When the
" knife has reached so far, the punctuation, or
" that part of the operation, which is preparatory
" to the section of the cornea, is completed.
" The broadest part of the blade is now between
" the cornea, and iris; and its cutting edge be-
" low the pupil; which, of consequence, is out
" of all danger of being wounded by it. At this
" time, as every degree of pressure must be taken
" off the globe of the eye, the fingers both of
" the operator, and his assistant, are to be in-
" stantly removed from that part, and shifted to
" the eye-lids; these are to be kept asunder, by
" pressing them gently against the edges of the
" orbit; and the eye itself is to be left entirely
" to the guidance of the knife; by which it may
" be raised, depressed, or drawn on either side,
" as shall be found necessary. The aqueous
" humour, being now partly, if not entirely,
" evacuated; and the cornea, of course, rendered
" flaccid: the edge of the blade is to be pressed
" slowly downward, till it has cut its way out,
" and separated a little more than half of the

" cornea from the sclerotica; following the semi-
" circular direction marked out by the attach-
" ment of the one, to the other.

" This completes the section of the cornea,
" which is the second part of the process. The
" incision being finished, the eye-lids are to be
" shut; as it is desirable that the eye should then
" have rest for a few minutes. If both eyes are
" to be operated on, then is the time for the
" cornea of the right eye to be divided in the
" same manner as that of the left had been be-
" fore; the knife being of necessity changed to
" the left hand.

" The cornea of both eyes being divided, the
" lids of the first eye are again to be opened,
" and kept separate, without the smallest pres-
" sure upon the eye itself. It will now be found,
" that the eye, which before, and during the
" incision, could not without difficulty be kept
" from motion, becomes more quiet and passive.
" This gives a favourable opportunity for the use
" of M. de la Faye's Kisistome. The blunt
" extremity of the canula is to be introduced
" under the flap of the divided cornea, and car-
" ried through the centre of the pupil, till it

" comes in close contact with the capsula of " the opake crystalline; when it must be ele- " vated to such a height, that the point of its " concealed lancet, being pushed forwards by " the thumb, a transverse slit may be made in " that membrane, parallel to the transverse " diameter of the pupil.

" The Kisistome is now to be withdrawn; and " when both capsulæ have been punctured, they " may be permitted to rest a little. The first " eye is then to be opened, but with the same " caution as before; and a gentle pressure is to " be made upon it, by applying the blunt and " convex extremity of the curette upon the con- " junctiva, just below the wound of the cornea. " By this means, if the cataract has formed no " adhesions, and the apertures made in the " capsula and cornea are sufficiently large, the " cataract will gradually rise out of its capsula, " and pass through the pupil into the anterior " chamber of the aqueous humour; from which " its own weight will bear it down, through the " wound of the cornea, and leave it upon the cheek.

" If any gross particles of the cataract, or of " the nigrum pigmentum, remain in either of the

" chambers of the aqueous humour; or between
" the lips of the wound in the cornea; or be-
" tween the globe and the ower eye-lid; they
" must be taken away by the scoop, or concave
" end of the curette; which may, if necessary,
" be repeatedly introduced, without danger, till
" the whole is extracted. If, again, during the
" operation, any portion of the iris be disturbed
" or displaced; so, as that it loses its figure, or
" has insinuated itself into the wound of the
" cornea; it must also be restored by the same
" instrument. This being accomplished in each
" eye, the flap of the cornea is to be smoothed,
" and the edges of the wound exactly adjusted
" to each other, by the convex extremity of the
" curette, and by gently rubbing the end of the
" finger over the upper eye-lid when shut. The
" window-shutters should now be closed in part,
" or the curtains drawn; but if both these be
" wanting, the patient may be turned from the
" light, and having continued in that situation,
" with his eyes shut for some little time, may
" then be permitted to open them again. This
" will be a good test of the success of the
" operation; for, if it has answered its end, the

" patient will, with transport, immediately pro-
" claim the return of his sight.

" Lastly, the eye-lids being again closed, and
" in the manner just described, a plaster of some
" simple cerate, spread upon lint, is then to be
" laid over them; which is to be covered with
" thin bolsters, made of some fine old linen, and
" the whole to be fastened by a cloth, pinned
" round the head: so as to lie upon the eye, but
" not in the least to compress it*."

I have already adverted to my practice of extracting the opaque lens, after first placing it with the needle in the anterior chamber, in cases where its nucleus is so firm as not to admit of division. This practice originated, in having, while at Exeter, in 1810, experienced the beneficial results of extracting floating pieces of capsule; and also from having (in the cases of undivided nuclei, mentioned in my work on Diseases of the Eye, which occurred to me early in 1812) witnessed the like favourable results, of extracting the nucleus of a solid lens, when, placed for absorption in the anterior chamber without division, it had excited a great degree of irritation,

* See Wathen on Cataract, p. 78.

by its mechanical friction against the iris. From these circumstances, I was encouraged at once to extract a hard and solid cataract, without leaving it in the anterior chamber for solution and absorption, after previously ascertaining with the needle, that from its solidity, it would not admit of a division; and, accordingly, in the month of June, of the latter year, I for the first time operated according to this new plan upon Mr. Israel, a gentleman of the Jewish persuasion, assisted by my nephew and assistant, Mr. Hockin, in the presence of the family surgeon, Mr. Van Oven, a gentleman now practising in the city. The favourable termination of this operation, from which not the slightest inflammation resulted, determined me from that period to perform it in all similar cases. I accordingly, the same year, also assisted by Mr. Hockin, operated on two other cases, by first placing the lens into the anterior chamber, previously to opening the cornea. The latter step of the operation was however effected in a different manner from that which I have since adopted, and which will be hereafter described, having carried the knife across the anterior chamber, in the manner

recommended by Mr. Wathen. In January, 1813, the Greenwich pensioners were placed under my care, by order of the Directors, and I performed this operation on all the men whose cases required it. This, in common with many other operations on the eye, which I am in the habit of performing, was witnessed by a great number of professional gentlemen, who were invited by the medical officers of that establishment, and by myself, to be present at their performance: and during the entire year in which they were from time to time performed, I never remember to have operated once, without the presence of some professional visitors. Dates and circumstances have been thus particularly noted by me, because I have sometimes had reason to complain of uncandid treatment. When a new operation in surgery, or the improvement of a well-known operation is proposed, the public probably are not very much interested in determining, to which individual the priority of invention should be allotted: the fact most important for them to settle, is, under whose hands the operation has been most successfully employed. But the feelings of an individual, who is anxious for the advancement of his profes-

sion, will naturally lead him to submit, for the opinion of the public judgment, the claims, which he believes himself to possess, to their favourable consideration, and by securing evidence of his own exertions for the public benefit, prevent others from wresting from him, the degree of reputation to which his labours may have entitled him. For these reasons, a record of the operation, and the manner in which it was performed, was preserved by the surgeon of Greenwich Hospital, in the hospital-books; and this fact is referred to, in my letter to the Directors, which was published, with other official documents, by order of the Board, and at the expense of the hospital. The necessity of this precaution soon became evident, for, in 1814, some months after the publication of the Greenwich Report, and two years after the operation had been systematically adopted in my practice, the new principle of placing the cataract in the anterior chamber previously to its extraction, was published by another practitioner, without any acknowledgment, that I had previously adopted, and also adverted to it, in my letter to the Directors of Greenwich Hospital. In a note indeed, in Mr. Travers's paper, there is a

case mentioned, as having been operated upon in this manner, twelve months before.

It may, perhaps, be said, that Mr. Travers had not even heard of the operation in question having been performed by me; and also, that although his description of the operation did not appear until the latter end of 1814, yet that he nevertheless practised it previous to the period of my having exhibited it to a great number of individuals. I cannot of course take upon myself to decide the question as to the probability of his having heard of this operation, or otherwise; but I have two very strong reasons for believing he had never performed it himself, previously to my operating on the Greenwich pensioners. The first is, that I have learned from a gentleman who witnessed all the operations at the London Eye Infirmary up to the latter end of 1812, that whenever extraction was performed at that institution, it was always done according to the usual method. The second is, that in the case of Edward Turner, one of the Greenwich pensioners, placed under my care, who had undergone thirteen operations in the London Eye Infirmary, (seven on one eye, and six on the

other,) I found the cataract of one eye, detached and floating behind the iris, where it still obscured four-fifths of the pupil. This was a species of case, to which the operation in question was peculiarly applicable, as, without difficulty, I placed the floating cataract in the anterior chamber. Finding, however, that its nucleus admitted of free division, instead of extracting, I left it for solution and absorption. If Mr. Travers had been in the habit of performing this operation at that period, his humanity, I conceive, would have led him to have done so in this instance, rather than subject the patient to so many useless operations. I say useless, because, I can positively affirm, that *not one-third part* of the lens in either eye was absorbed when I operated upon him, which fact was witnessed by the medical officers of Greenwich Hospital, by Mr. Astley Cooper, and by Mr. Merley, late assistant at the London Eye Infirmary, who had seen Turner while a patient of that institution.

It has been submitted to me, by some of the numerous surgeons who have seen me perform this method of extraction, whether I am justified in having used the word "novel" as applied

to it in my letter to the Directors of Greenwich Hospital, and whether it may not be said, that St. Yves, in 1707, had performed a similar operation. I was perfectly aware of his having extracted a cataract, which had *accidentally fallen into the anterior chamber of the eye,* at the time I wrote that letter.

The following is the passage where he describes the first case which occurred to him, requiring the extraction of a cataract, which was lodged in the anterior chamber of the eye. "The "first was in the year 1707, in presence of "Mr. Mery, a member of the Royal Academy "of Sciences. I performed it on a merchant of "Sedan; he came to Paris on account of a "shaking cataract which had passed through the "hole of the pupil, into the anterior chamber of "the aqueous humour. The cataract, by pressing "very much the iris, occasioned violent pains in "his head, attended with the want of sleep for "three months before. At that time, I had "never heard of the like operation; but, reflect-"ing, that I often opened the cornea, to dis-"charge the matter of an abscess lodged behind

" it, I concluded I might safely do the same, in " regard of a solid body; and I performed the " same operation*." In other words, St. Yves, being thus called upon to remove a cataract, which, from its situation in the anterior chamber of the eye, was occasioning very severe sufferings to the patient, had no resource left but to remove it in the best manner he was able, and therefore extracted it by making an opening in the cornea, (in a similar manner as he had been accustomed to discharge purulent matter which had formed in that cavity,) not, however, with any view of restoring the patient's sight, but merely to relieve him from the acute pain produced by the pressure of this extraneous body against the iris.

To have contended, that the common operation of dividing the cornea, for the purpose of extraction, was novel, would be so obviously absurd, that those who may be inclined to dispute with me the novelty of the operation, can never have pretended, that the claims to originality were founded upon this basis. Yet this is the only part of the operation which resembles that of St. Yves; and,

* See Translation of St. Yves's Work, by Doctor Stockton, page 163.

even here, my practice is more like that of Daviel, than his; as St. Yves performed the section of the cornea by carrying the knife across the anterior chamber, which practice I abandoned from the unfavourable results I found attending it, and which method of accomplishing that step I condemn in the operation described by Mr. Travers, and just now alluded to.

The operation performed by me, is adapted particularly to those cases, where the nucleus of a cataract is too hard, to admit of immediate division. It consists of two stages: The pupil of the eye being dilated by belladonna, the entire cataract, is first placed with the needle, in the anterior chamber of the eye; the cornea is next divided, and the extraction of the lens completed. What then, may I ask, has been borrowed of St. Yves? Surely not the whole of the operation just stated. It cannot be the removal of the opake lens into the anterior chamber of the eye, for that had been effected by accident, three months before St. Yves saw the patient, and, it would appear, by the following passages in his work, taken from under the head, " How to prevent " the accidents which attend the operation of

" the cataract," was a circumstance, which had at first caused him considerable embarrassment. Nothing then, could have been adopted from him, unless it be the application of belladonna, or the common incision of the cornea in the operation by extraction, which, if offered as any bar to my claim of originality, would be too absurd to require a reply.

St. Yves's words are, " The fourth difficulty is, " when in couching a cataract, it enters the " anterior chamber of the eye, and passes " through the hole of the pupil. This hap- " pened to me in an operation I performed " on a woman, in the Rue St. Honore. M. Petit " assisted. As soon as I pressed the cataract " with the needle, a glutinous matter emptied " itself into the aqueous humour, and was " carried with great violence into the anterior " chamber of the eye, between the iris and " cornea transparent. I continued to operate " as long as I could, but *not being able to bring* " *back the glutinous matter, which had flowed into* " *the anterior chamber,* I was forced to draw out " my needle. Some months after, all that " matter which had glided between the iris,

" and the cornea transparent, repassed through " the hole of the pupil, into the posterior cham- " ber; and, in some time after, all that fluid part, " was sunk below the back-part of the iris; " then the patient could see clear, though she " had not immediately after the operation."— He adds—

" *Whatever passes, during the operation, through* " *the hole of the pupil, if it be of sufficient solidity,* " *the point of the needle, which is already in the* " *eye, must be pushed through the hole of the pupil,* " *without touching the iris; then pierce that body* " *of the cataract with the point of your needle,* " *bring it back to the posterior chamber, and place* " *it where it is usually placed**."

The above extracts are decisive of the question; and from them it is in the fullest degree apparent, that the operation of extraction, performed by St. Yves consisted only of the second stage, of my mode of conducting the operation, and was only resorted to by him, when accident, and the severe sufferings of the patient, had left him no alternative, but to get rid of the cataract by some means or other; but that his general

* See Translation of St. Yves, pages 270, 271.

method of proceeding, and mine, are quite different, as he afterwards gives particular directions when a similar "accident" (the passing of the lens into the anterior chamber) happens, during the operation, instead of *extracting*, to bring it back again into the posterior chamber and to depress it, though evidently at the risk of injuring the iris with the needle, in the attempts to do so. Had St. Yves, or any of his successors, drawn a deduction from the above-recited facts, and practically applied them, by placing the cataract in the anterior chamber, and then extracting it, I should certainly have no claim to novelty; but having never seen, or heard of any person who ever did so, for a considerable time after I had been in the constant habit of practising it, I conceive that every candid person will allow, I was, and am, fully justified in applying the word "novel" to the operation which I perform; and will even further add, as I hope to make it appear to the satisfaction of my readers, that this operation is, in a considerable variety of cases, attended with peculiar advantages, and exempts the patient from many of the dangers, attendant on the usual mode of perform-

ing extraction, that it is to be regretted, more than a century should have been allowed to pass, without taking practical advantage, of the important fact which had accidentally occurred to St. Yves.

The above candid explanation, I should hope, will set the question of my claim to priority, as well as novelty, in the practice of the operation I am now about to describe, fully at rest.

The eye is first prepared for the operation by the application of belladonna, a very weak solution of which I employ over night. I prefer doing this, in consequence of finding it advantageous, while making the opening of the cornea, that the pupil should resume its natural size, as soon as the opake lens, has been placed into the anterior chamber, which could not be the case, were the solution of belladonna to be made strong, and applied but a short time before the operation. The first part of the operation, should be conducted precisely as if the cataract were of the soft kind, by introducing the two-edged needle, through the sclerotica, a line behind the iris, with its flat surface parallel to that membrane. Its point is then to be directed through the posterior chamber,

on a line with the transverse diameter of the opaque lens, when its edge should be turned backwards, and a complete division of the capsule, and lens, be attempted, in the manner which will be hereafter more particularly described. If, upon trial, the lens be found too hard to admit of an immediate division, the point of the needle should be withdrawn a little, and then carried something below the line of the transverse diameter of the cataract, when, upon making pressure with its flat surface against the latter body, it becomes dislocated, and the upper part tilts forwards, through the pupil, into the anterior chamber, after which, without any difficulty, it may be entirely carried through the pupil, and with its posterior part turned forwards. When this is effected, the operator with the point of the needle, (taking care, however, not to wound the iris,) should lacerate, or cut in pieces, the remaining part of the capsule, throughout the whole extent of the circumference of the dilated pupil*,

* In the majority of instances, I believe the capsula propria is brought into the anterior chamber with the cataract, in which case, of course, the process of the vitreous tunic, which lines the fossula of the vitreous body, is the membrane which is destroyed with the needle.

by which means, secondary cataract is certainly avoided, unless an adventitious membrane be formed, in consequence of inflammation. Having accomplished this important part of the operation, the needle is to be withdrawn, when the operator should proceed to extract the opaque body.

The patient should now be laid down on a table on his back, with the head somewhat raised, which is a far preferable position to his sitting in a chair, whereas the latter position is the best for executing the primary part of the operation, namely, the bringing the opaque lens into the anterior chamber. The operator, then makes an opening in the temporal margin of the cornea, with a lancet, or double-edged extracting knife*. This opening is enlarged both upwards, and downwards, with a small curved knife, in shape and size similar to the probe-pointed knife, described by Baron Wenzel, with the button removed, until it is made sufficiently large to admit of the free passage of the lens; through which a small hook is introduced, with its flat

* This method of opening the cornea is very similar to that formerly described by Daviel.

surface between the anterior part of the iris, and the posterior part of the lens, which should be carried to the centre of the pupil; the curved point is then turned forwards, and the cataract laid firm hold of, when it is extracted without any difficulty. By this means, the cataract is extracted, without any pressure being made upon the ball, and through an opening much smaller than what is required, in the usual operation of extraction. Should the cataract separate while in the act of extraction, which is sometimes the case if it be brittle, the fragments may be extracted separately, either with the hook, or a small scoop. I am not, however, very solicitous to remove every fragment of the cataract, for if some of them are so small as to elude the hook or scoop, I allow them to remain, as they are sure to sink to the bottom of the anterior chamber, where they usually dissolve before the opening in the cornea has healed sufficiently, to admit of the eye being used; and as the opening* is made vertically, at the outer

* I have employed the word *opening* of the cornea, instead of *section*, as the former, I think, gives a better idea of the manner in which I effect this step of the operation, than the latter.

margin of the cornea, they do not interfere with its healing, as would be the case were the section of the cornea made in the usual manner.

Having thus given a description of the two methods of extraction, the first as generally practised, the latter as performed by myself, before I proceed to inquire into the numerous causes of failure in the former, and to point out in what manner these may be avoided by the operations which I pursue, it may not be improper to premise, that those who practise the older mode of extraction, in general, confine themselves exclusively to that operation, whatever may be the age of the patient, the consistence of the cataract, or its complications. From the various species, varieties, and combinations of the disease, described in the first chapter of this book, it must appear evident, that no one operation, can be equally applicable to all. It is the duty, therefore, of the surgeon, to investigate the causes of the difficulties, and embarrassments, which give rise to the frequent failures which must necessarily result, when the same operation is indiscriminately employed, and to exert his ingenuity, in order to

devise means, by which the causes of failure may be avoided. Such has been my endeavour, and I trust that it will not be deemed presumptuous in me, to express the hope, that these objects, are in a great measure accomplished, by the adoption of a series of operations, which vary in their nature, according to the species of disease to be operated upon.

The leading principle of my practice, is, *that the operation effecting the solution, and absorption of lenticular cataract, should be performed in all ages, and in every combination, of that species of disease, in preference to all other operations, when it can be done with safety.* This, as already mentioned, is always practicable, when the consistence of the cataract admits of free division; in which case, I afterwards place a part, or the whole of the fragments in the anterior chamber, where they become absorbed, in the space of a few weeks, without producing either pain, or inconvenience. But as, unless the cataract admits of having its *nucleus* divided, it requires a considerable time, to effect its absorption, and sometimes also several operations, in order to obviate these inconveniences, I now, in such cases, at once extract it. In performing

the operation of extraction, as just described, I have the great advantage, of first ascertaining with the needle, whether the cataract admits of division, or not, which is not possible, where the usual method of extraction is performed; when, however ill adapted the case may be, to that operation, or however favourable to the absorbent practice, the patient is nevertheless exposed to dangers peculiar to extraction, and from which dangers the absorbent practice is wholly exempt.

In the prosecution of the proposed inquiry, it is my intention, first, to point out the very considerable proportion of cases of cataract, to which the operation of extraction, as usually performed, is admitted to be either ill adapted, or wholly inapplicable; and, afterwards, to shew, that even in those cases where it is most indicated, that it is liable to dangers which, as will be hereafter seen, are, in general, beyond the power of the surgeon to prevent, or remedy, but which are entirely obviated by the practice of my series of operations. In doing this, I shall not pursue the course, too often adopted by the advocates of the rival operations, namely, that of exaggerating the

dangers, and disadvantages, of the one which they oppose; neither shall I seek for objections, among authors inimical to extraction, but shall select those objections (almost exclusively) from the works of its warmest admirers, who cannot be suspected of having pointed out dangers, which do not really exist, or of having particularized them as they have done, with any intention, to prejudice the profession against its general adoption.

CHAPTER III.

Sect. 2.

View of the different Cases to which the usual Operation of Extraction is either ill adapted, or wholly inapplicable;—with a Description of Modes of operating, by which the Causes of Failure attending that Operation may be avoided.

On the Inapplicability of the usual Operation of Extraction, in Children, and Persons born with Cataract, either Infants, or Adults.

EXTRACTION is an operation scarcely practicable in children, or in persons who have been born blind: in the former from the difficulty, and frequently the impossibility, of prevailing on them to keep the eye steady; and, in the latter, from their want of power to do so, in consequence of the muscles of the eye not being subservient to the will, from which circumstance, the eye is in continual motion, which the patient is unable by his utmost efforts to prevent. Should the usual mode of extraction be attempted in these cases, it must generally fail, from the difficulties which exist in its performance; and which the utmost skill on the part of the operator cannot

overcome. In consequence of the intractability of children, and the use of a speculum being inadmissible in the operation of extraction, some of the most eminent authors have, in such cases, advised, that its performance should be postponed until children have attained the age when reason points out to them the necessity of complying with the instructions given by the operator.

Baron de Wenzel, when speaking on this subject, says, " This disease, (cataract,) which " seldom attacks persons before the age of " forty, comes on, nevertheless, sometimes, at " a much earlier period. In this latter case, " the crystalline humour is generally milky, and " both the anterior and posterior portions of " the capsule, are also at the same time opaque. " The operation, therefore, is not so certain a " cure for the cataract in children, as in persons " of a more advanced age. Children, again, some " of whom are born with cataracts, are, in ge- " neral, so unmanageable, that the operation " becomes almost impracticable. For these rea- " sons, it is adviseable to postpone it, until they " arrive at the age of reason and reflection, and " feel by experience the necessity of submitting

" to it*." Both Janin and Warner speak to the same effect.

The late Mr. Ware, I believe, generally acted upon the same principle, until he saw me perform the operation for the soft cataract in the case of Mr. Purkis, of Chancery-lane, who was born blind, and who, at thirty years of age, successfully underwent this operation; after which period, it appears (by Mr. Ware's account in the third edition of his work on Cataract) that he adopted the instrument which he saw me employ upon that occasion, and my mode of operating on children, which proved very successful.

That it is a great desideratum to be enabled to operate with success on children at an earlier age than was advised by Baron de Wenzel, and generally acted upon by those who practise extraction, every one must admit; not only a number of years are lost to the patient who is thus suffered to remain in a state of blindness, but when the child is born with cataracts, and they are not early removed, even were he not so " unma-" nageable" as the Baron represents, the very worst consequences would result from the long

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

delay; the rolling motion of the eyes becomes so confirmed, and the retina so insensible from inaction, and the patient thereby acquires such a great degree of indolence in the employment of his eyes, that it frequently happens the most successful operation, when performed under these circumstances, contributes but little to the blessing which he had hoped to obtain.

Mr. Saunders was the first who proved the practicability of operating with success on children at an earlier age than had been previously considered to be possible, and my own experience shews, that cataracts occurring in children, whether they be congenital or not, are cases most favourable for the operation described in my work on Diseases of the Eye, under the head of "Operation for Solid Cataract in Children "and Young Persons." By the use of the speculum, (which is wholly inadmissible in extraction, consistent with the safety of the organ,) I have the most complete control over the motions of the eye-ball, and, from the soft state of the nucleus of the lens, it can always be freely divided without difficulty, so as afterwards to place the fragments in the anterior chamber for dissolution and absorption. I have

practised this operation with an uniformity of success, as will scarcely be credited by those in the habit of witnessing the results of the older modes of operating.

Capsular, or Secondary Cataract.

Capsular Cataract is very difficult of extraction, and the operation exceedingly uncertain in its result, in consequence of the necessity which exists of introducing the forceps, or hook, through the pupil, after the cornea has been opened, in order to extract the opaque capsule. In every operation for cataract by extraction, the necessity of making so large an opening in the cornea is fraught with very serious dangers and accidents, not under the control of the surgeon. I shall, in particular, observe, that when instruments are carried through the pupil in the manner indispensably necessary to extract an opaque crystalline capsule, the vitreous capsule is generally ruptured in a considerable degree by this separation, causing large protrusions of the iris, from the copious discharge of the vitreous humour, which is often followed by an obliteration of the pupil, or a total destruction of the eye. To these

causes of failure may be added, the liability to opacity in the cornea when the section does not heal by the first intention, which the frequent introduction of instruments through it, is very likely to prevent; and which opacity not unfrequently prevents vision as certainly as the cataract which has been removed.

If the foregoing remarks are accurate in cases where opaque capsule is free from adhesions, how much more strongly do they apply, when, as it most commonly happens, the capsule adheres to the iris? as, in addition to the dangers just enumerated, it must be apparent, so much violence is in such cases done to the iris, in the various attempts to tear asunder the adhesions in order to extract the capsule, that the most dangerous inflammation, with its fatal consequences, frequently follow.

Richter, at the time he published on extracting the cataract, was well known to have been the most zealous advocate for that operation, and, I may add, he was one of the most scientific and candid authors, who has ever written in its favour, states it as his opinion, that this adhesion of the capsule to the iris, generally exists

where opacity supervenes after the extraction or couching of the cataract*, which are the general causes of this variety of the disease. When speaking upon this subject, he says: "Should "the opacity not yield to these remedies, (local "applications,) I would make an incision in the "cornea, and extract the capsule. Mr. Janin has "done this, so late as six months after the opera- "tion of extraction, and with the best success. "In such cases, however, the capsule is generally "connected with the iris, and is therefore not "always so easy to be detached; nay, *this is* "*sometimes altogether impossible*†."

Baron Wenzel remarks, "If the opaque capsule "adhere to the iris, and an attempt to extract it "be persisted in, there is danger of separating "the iris from its connexion at the outer margin, "and inducing blindness from this cause‡."

Mr. Benjamin Bell, when treating of this sub-

* From puncture, or rupture of the capsule from accidents, &c., the lens is usually dissolved by the aqueous humour, and absorbed; and capsular cataract results, frequently adhering to the iris.

† Richter, English translation, on Extracting the Cataract, page 146.

‡ See Ware's translation, page 25.

ject in his System of Surgery, says: "In a few "instances of cataract, the cause of opacity is not "found in the lens itself, but in its capsule. In "this case, the extraction of the lens answers no "good purpose, as the opacity is equally strong af- "ter the operation, as it was before. Some authors "have therefore, in such circumstances, advised "the opake capsule to be removed with forceps, "and other instruments passed through the pupil; "but this can never be done but with much risk "of destroying the iris, and doing much injury to "other parts of the eye. It ought never, there- "fore, in my opinion, to be attempted; we should "rather trust to time, and an antiphlogistic regi- "men, for the removal of the opacity; from which "no harm can ensue, and I have known instances "of cures performed by it: whereas the forcible "extraction of the opake capsule, as far as I have "yet heard, has never in any case effected a cure, "and it has frequently destroyed the eye en- "tirely." Again—"The opake capsule may in- "deed be forcibly torn away with instruments "passed through the pupil, but not without doing "such violence to the eye, as must in a great "proportion of cases, probably in every instance,

" be productive of certain blindness. I may, " therefore, without hesitation, predict, that al- " though this operation may be performed from " time to time, by those who are fond of innova- " tion, and who wish to shew their dexterity at " the expense of those intrusted to their care, " that it will never be generally practised. I have " seen it done by some of our most expert oculists, " but in every instance the eye was completely " destroyed by it, while the inflammation which " it served to excite, never failed to prove un- " commonly severe*."

These passages from Mr. Bell's work, I presume, allude to the removal of the anterior part of the capsule. By the following quotation from Mr. Ware†, it would appear that he considered the removal of the *posterior* part of the capsule to be equally hopeless. " The anterior part of the " capsule can alone become the object of the ope- " rator's attention; its posterior part is neces- " sarily hidden, whilst the cataract remains in the " eye, and afterwards, if it be discovered to be

* See Bell's Surgery, vol. iv. page 229.

† Page 317 of the second volume of his work, on Diseases of the Eye.

" opaque, it is so closely connected with the cap-
" sule of the vitreous humour, that I believe it
" cannot be removed by any instrument, without
" hazarding a destructive effusion of this hu-
" mour*."

Fluid Cataract.

In Fluid Cataract the capsule is very generally opaque, and as its fluid contents escape so soon as the capsule is opened, the case is then reduced to one of simple capsular cataract, which necessarily requires to be similarly extracted by those who confine themselves to the usual mode of performing that operation. In this case, adhesions seldom exist between the capsule and iris; nevertheless, when they are found, the same dangers are incurred, as in operating on adherent capsular cataract; to which, I may add, what I there omitted, namely, the difficulty, and, indeed, frequently the impossibility, of prevailing on the patient to keep his eye sufficiently steady during the repeated introduction of the forceps or hook, as well as the great probability of the eye being compressed by the lids, after the removal of the capsule, (should the operator

* See Ware on Diseases of the Eye, vol. ii. page 317.

be so far able to succeed,) and which would most likely force out the greater part, if not the whole of the vitreous humour; as there would then be nothing left to prevent its escape; the vitreous tunic having been necessarily ruptured by the forcible separation of the capsule of the lens to a considerable extent.

All the dangers here detailed, and which are necessarily attendant on the operation of extraction in the *capsular*, *adherent capsular*, and *fluid cataract*, are wholly obviated by my modes of practice. Indeed, in a very large majority of such cases, I have found these species of cataract much more expeditiously removed, even than soft cataracts in children, which usually take some weeks in dissolving; whereas the capsular cataract, (whether adherent or not,) is immediately removed by the operation, so as no longer to impede vision.

The instrument I employ in these cases, is a needle with a very slight degree of curvature at its point; with which I rupture the capsule very freely, when it will admit of it, until the pupil is perfectly clear throughout its whole extent. When, however, the capsule is so much thickened, that this laceration cannot be effected, I proceed

to detach it completely from the ciliary processes, except at one point; it should then be repeatedly pressed with the point of the needle, until the capsule can no longer be seen within the area of the pupil*. This point of attachment serves to prevent the capsule from floating in the axis of vision, an evil which I have frequently seen, when the capsule was wholly detached. This point of attachment may be chosen either in that part of the

* Professor Scarpa says, page 357 of his work on Diseases of the Eye,—"To be more explicit, the most common cause of "failure in the operation for the cataract, whatever be the me-"thod of performing it, is not owing to the crystalline lens, "however dense it may be, but to the capsule of the lens, and "more particularly its anterior convexity. It is to be wished, "that the art of surgery were in possession of some easy and effi-"cacious means, by which the surgeon, in every method of ope-"rating, might be able to separate with exactness, together with "the opaque crystalline, the entire capsule of the lens from the "zona ciliaris, to which it is attached; an event which occasionally "happens, from a happy, but unforeseen, combination of circum-"stances." From the description given of my operation for capsular cataract it is seen, that the desideratum upon which so much stress is laid by Professor Scarpa, has been obtained, for not only can the objects proposed be accomplished after the removal of the lens by extraction, or depression, but it can with equal certainty, according to my modes of operating, be accomplished, after the lens has been placed in the anterior chamber for solution, or extraction, should its investing capsule not be removed with it.

ciliary circle situated below the margin of the pupil, or externally towards the outer angle of the eye; in either case, the capsule, being thus extensively separated from its natural adhesions, becomes softened in the vitreous humour, where it gradually contracts into so small a compass, as in no respect to impede the passage of light to the bottom of the eye; while, from the small attachment to the ciliary processes, it cannot again move from its situation, even should it not ultimately become absorbed.

It may, however, happen, from the elasticity of a capsule, which has become very much thickened, that after withdrawing the needle, it again mounts up; but, in this case, the needle may be again introduced into the eye, through the same puncture, or the operation be subsequently performed without doing injury, and with the same prospect of success as at first; whereas, if any attempt is made to extract the capsule in the usual manner, and the operation fails, although the eye should escape destruction, (which it may be presumed, from the quotations I have made, is not very likely,) there are very few operators, I conceive, who would venture a second or third time to open the

cornea, or who could expect to be more successful than at the first attempt.

When the capsule adheres to the iris, and after having separated the adhesions, the operation is to be finished precisely in the same manner as above described. The separation of the capsule from the iris, if the surgeon proceeds with caution, may always be effected with safety, except, indeed, when the pupil is very much contracted, or wholly closed; in the latter case, I find it a preferable practice to divide at once both iris and capsule, and thereby to form an artificial pupil.

In fluid cataract, which, as already stated, is generally accompanied with an opaque capsule, I proceed in a similar manner, preferring, however, in this case, the use of the double-edged, to that of the curved needle. After the opaque fluid is let out of its capsule, and is diffused in the aqueous humour, the point of the instrument should be somewhat withdrawn, and the capsule treated as described for the removal of capsular cataract, by which means the pupil becomes frequently cleared at the first operation. If, however, after the absorption of the turbid aqueous humour has taken place, it should be found that any part

of the pupil is still occupied by the opaque capsule, the operation for capsular cataract may be performed as soon as the eye has recovered from the former operation. In this case, the rapidity with which a fluid cataract is sometimes removed by absorption (the more tedious process of solution having been previously accomplished) is scarcely to be imagined, except by those who have witnessed the extraordinary phenomenon. I have repeatedly found the natural transparency of the eye completely restored in a few hours after the operation, and, on one occasion, which has been already noticed, in a few seconds, indeed before the needle was withdrawn from the eye.

From what has been said, it must be apparent with how much greater safety, and facility, the different species of cataract, last described, admit of removal by these modes of operating, than by the usual practice of extraction: indeed, these operations are so infinitely more simple and safe than extraction, that, far from Mr. B. Bell's unfavourable opinion being applicable to them, I as seldom fail in capsular cataract, as in any other species of the disease.

The recovery from the operation of capsular

cataract, is comparatively as rapid as its execution, the eye being usually completely well within a week: and I have known a patient run the hazard of going to the play on the third evening, and who has returned home, a distance of fifty miles, on the fifth day after the operation, without suffering in the slightest degree from this imprudent conduct*. In another instance, a gentleman, who had been under treatment three years, and who had undergone the anterior operation five times without success, had the capsule removed by me, from the axis of vision, in the presence of Professor Asselini, and instantly saw to tell the hour by my watch. The following morning, assisted by a cataract spectacle, he read a newspaper, on the second day, took a walk in the Park with merely a small green shade over his eye, and on the fourth, he returned to the country perfectly cured, without having experienced an unpleasant symptom, and was enabled to

* Within the last week of my committing these observations to paper, I have performed this operation upon a gentleman from the island of Jamaica, and substituted a shade for a plaster the third day after the operation; and on the fifth he walked abroad without experiencing any unpleasant consequences.

see more distinctly than he had ever done before, there having always been an indistinctness of vision in the eye operated on. In these cases, my patients are not confined in bed above a day, as inflammation very rarely succeeds the operation.

Capsular Opacity, with a transparent Lens.

It will occasionally be found that either the anterior, or posterior part of the capsule of the lens, or both together, are opaque, while the crystalline itself remains perfectly transparent. This state of disease in the membrane, occasions blindness: whether, therefore, the opacity be confined to the anterior or posterior part of the capsule, or extends to both, in either of these cases, the removal of the lens is equally necessary, after the capsule has been wounded, as the lens always becomes opaque. If the opacity of the capsule is the result of inflammation, as is frequently the case, it is most commonly seated in the anterior part, and is very generally complicated, with an adhesion to the iris: but, it sometimes exists without such complication. In either

case, when extraction is performed, there is the double danger, first, of extracting the lens, and secondly, the opaque capsule. The danger attendant on the extraction of the lens, must of course depend upon the general circumstances of the operation of extracting the cataract when the capsule is free of adhesions to the iris; but when these adhesions do exist, the difficulty and danger are greatly increased, in consequence of the firm union between the anterior part of the capsule, and the posterior part of the iris, preventing the possibility of the pupil from dilating sufficiently, until these adhesions are first liberated, so as to admit the passage of the lens through it. Should the operator attempt to overcome this impediment to the passage of the lens by increasing the pressure on the globe of the eye, he will not thereby facilitate the passage of the lens, but will run risks of various kinds—of forcing out the vitreous humour, leaving the lens in the eye, or causing inflammation in so great a degree, by the mechanical violence inflicted on the organ, as to occasion suppuration and its entire destruction. Again, if he attempts to liberate these adhesions by the introduction into the eye, of the needle, knife, hook,

forceps, &c.; he not only increases the dangers already detailed, but he will, I conceive, very frequently fail in effecting the complete separation of the capsule, without which, it is impossible for him to get a full-sized lens through the pupil, the diameter of which is frequently equal to that of the iris*. In a case where the capsule adheres to the iris, it is obvious, that merely destroying the capsule to the extent of the circumference of the pupil, will not facilitate the extraction of such a lens, whether opaque, or otherwise. In cases, however, where no such adhesions exist, after the removal of the lens, the opake capsule must be extracted; so that the patient is subjected to the dangers attendant on the extraction of an opaque capsule, it being now reduced to a simple case of capsular cataract.

I have hitherto only spoken of extracting the anterior part of the capsule of the crystalline lens; it, however, frequently happens, the posterior part is also opaque when the anterior part, as well as

* This I have frequently had the opportunity of ascertaining, when the whole of the lens, has been at once placed in the anterior chamber, for extraction, or absorption.

the lens, remain transparent. The difficulty of removing this posterior portion of the capsule by extraction, is necessarily increased in consequence of being situated deeper within the eye, and from the danger which arises by the introduction of instruments through the section of the cornea and pupil, as well as by the escape of the vitreous humour,—circumstances confirmed by the high authorities already quoted. The prospect therefore of success, is still further lessened, when, in addition to the opaque capsule, the operator has also to remove the lens, even should there be no adhesions; but when these adhesions do exist, the obstacles are so much increased by the usual contracted state of the pupil, and the difficulty of liberating the capsule from the iris, so as to admit the passage of the lens through the pupil, that even the most experienced operators in extracting the cataract have, in general, declined operating in such cases; and when they have run the hazard of it, the results have not proved as satisfactory as their skill and dexterity merited.

When the cataract itself adheres to its capsule, which it is sometimes said to do, the objections

to extraction apply nearly as much as when the capsule adheres to the iris.

The reader is probably prepared to expect, from what I have already stated, that the cure of these complicated cases may be effected with greater safety by the use of the needle, than by opening the cornea for extraction; but it will perhaps excite some surprise, to find that these apparently insurmountable objections to extraction, are so completely and entirely obviated by my modes of practice, as to render such cases as practicable and as certain of success as if they were totally unconnected with such complications.

When an opacity either of one or both portions of the capsule exists with a healthy lens, I usually find no difficulty in dividing both capsule and lens so freely as to admit of their being left in the anterior chamber, in which situation they become speedily dissolved and absorbed. Should, however, any part of the capsule have been left undivided, so as to obscure a part or even the whole of the pupil, it may be safely removed by a subsequent operation as already described for capsular cataract. It is an important fact to know, that an opaque capsule is cut in pieces

with more ease and more certainty before than after the lens is removed (provided it be soft, which it always is when transparent), as the lens affords sufficient resistance to the action of the double-edged needle, for the want of which resistance, in purely capsular cataract, that membrane frequently cannot be divided.

When both the lens and capsule are opaque, and admit of division, they are to be treated as above described. If the lens should be found too hard to admit of this division, it should then be passed through the pupil, preparatory to extraction. After this has been accomplished, and before the needle is withdrawn, the operator should carefully detach the capsule from its ciliary connexion, the full extent of the circumference of the pupil, by which means a second operation for capsular cataract rarely becomes necessary.

Capsular Opacity, with an opaque Lens.

The adherent, or concreted cataract, as it is called by Richter, is another species of that disease, to which the usual mode of extraction is very inapplicable, and in which it very frequently

fails. This arises from the injury the iris sustains, by the introduction of instruments through the pupil, after the section of the cornea has been made, and by the forcible separation of the iris from the capsule, as well as subsequently, by the great degree of pressure which is requisite to be made upon the globe of the eye, in order to force the lens through the contracted undilatable pupil, together with the discharge of the vitreous humour, which usually follows. Richter, after describing this species of the disease, says, "In "this case, the success of the operation is very "doubtful indeed." He adds, "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 precaution previously, in order "to prevent the subsequent inflammation from "running too far*." Again, "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

* See Richter on Cataract, p. 92, 93.

" the iris and lens be completely connected, the " case is incurable*." The uncertainty and danger of this operation, as here described by Richter, whose opinion I believe to be perfectly correct, (having myself witnessed its unfavourable results in the practice of those who perform the usual mode of extraction,) are confirmed by Mr. Ware, who observes, " Where an opacity " of the capsule is the consequence of violence " done to the eye, as of an attempt to depress " the crystalline; or, when it proceeds from an " internal inflammation of this organ, an adhesion " not unfrequently takes place between the ante- " rior part of the capsule, and the posterior " surface of the iris; which adhesion usually " occasions a contraction of the pupil, and pre- " vents this aperture from dilating, and contract- " ing, with so much freedom as it ought, and as it " would do, if the iris were unconfined. Such a " state of the eye, appears to me, to be a very " strong objection to the performance of any " operation, since the degree of the adhesion " cannot be ascertained; and when the adhering " parts are separated, the violence which must

* See Richter on Cataract, page 95.

" be unavoidably done to the iris, by the passage " of the crystalline humour through the contracted " pupil, will strongly dispose this aperture to " contract still more, and perhaps may cause it " to close entirely*."

All these dangers, may, with great certainty be avoided, by adopting my operations for this species of cataract. However extensive the adhesions of the capsule to the iris may be, if the pupil be not very much contracted, I cut up the capsule and lens (when soft) as much as possible, before I entirely separate the adhesions, otherwise they would become floating, and afford no resistance to the needle, and then push a part, or the whole of the fragments, through the pupil, into the anterior chamber, for solution and absorption. When the cataract is soft, and the pupil not very much contracted, it may be freely divided with the needle, even with more certainty in consequence of its adhesion to the iris; the adhesion, forming a firm counter-resistance to the pressure of the instrument, which enables the operator to clear a larger area of the pupil at once. By separating the circumference of the adherent capsule and

* Ware on Cataract, page 318.

lens, the whole of these bodies become absorbed, and the source of the adhesion being thus removed, the pupil is found sufficiently enlarged for all the purposes of vision. I have found in my practice the hard and solid lens less frequently complicated with adhesions to the posterior part of the iris than the soft kind, which admits of being divided with the iris scalpel, without any difficulty. Indeed, the success which I have had in this operation of making an artificial pupil, and effecting the absorption of the lens, (the description of case considered incurable by Richter,) has been nearly as great as in cases of simple cataract. Should, however, the appearance of the cataract, or the age of the patient, indicate that it is too hard for this division, the operator must, at first, with the iris scalpel, divide the iris, as in the operation for artificial pupil, hereafter to be more fully described, the natural pupil being in such cases so much contracted, that it is impossible to cause the lens to pass through it. After making an opening three-fourths the extent of the transverse diameter of the iris, he should with the point of the same instrument liberate the

adhesions, and afterwards push the undivided lens enveloped in its capsule through the newly-formed aperture, into the anterior chamber. The operator should directly proceed to extract the lens, according to my mode of conducting that operation, which is more easily done, than even in a case of simple cataract, as there is no fear of any protrusion of the iris, either by the escape of the vitreous humour, or by any involuntary action in the muscles of the eye. It is evident that in the soft species of adherent cataract, the dangers attendant on the forcible separation of the adhesions, by the introduction of instruments, through the section of the cornea, and pupil, together with the consequent escape of the vitreous humour, are, by the operations above described, completely avoided, as well as the same dangers, and the mischievous pressure made upon the globe of the eye, according to the usual mode of extraction, (and commonly made to no purpose,) in attempting to force a large lens through a contracted and undilatable pupil*.

* I have seen a gentleman, in whose case this happened, under the care of the late Mr. Ware, in whom amaurosis, and a complete obliteration of the pupil, were the result.

If the pupil should be too much contracted to admit a sufficient passage of light after the removal of the cataract, I at once divide the iris with the iris scalpel, and form an artificial pupil. By the same action of the instrument, the central division of the capsule and lens, (provided the latter body be of a soft consistence,) is also generally effected, some of the fragments of which I usually push into the anterior chamber, and allow others to remain between the edges of the divided iris, in order to prevent their reunion by the first intention, where they become dissolved in the space of a few weeks, leaving the new pupil quite clear, and in the most beneficial manner answering all the purposes of vision*. I am induced to prefer this division of the iris, even when the pupil is of a moderate size, rather than hazard the inflammation which may follow the separation of those firm and extensive adhesions described by Richter. In a large number of cases, I have observed, that the division of the iris very rarely pro-

* I have recently seen a gentleman, whom about five years since, I restored to perfect sight, (when assisted with a cataract glass,) by this operation. He had been blind thirty years. The size of the newly-formed pupil has increased considerably since it was first made.

duces that morbid consequence; which fact induces me to name another. Although we are taught that the iris possesses great sensibility, yet I have almost uniformly observed, that (when in a healthy state) its division, gives the patient very little pain, whereas during any attempt to detach the capsule, when it firmly adheres to the iris, the pain has sometimes been severely complained of, and the inflammatory symptoms consequent on the separation, have been proportionably great. The first species of case, namely, where the pupil is not much contracted, is, comparatively, a rare one; as, in inflammation of the iris, which is usually the cause of adherent cataract, the pupil in general becomes nearly closed, unless appropriate means are employed to prevent this unfavourable termination to that species of inflammation.

I have enumerated *accidents*, among the causes of cataract, which either occasioning a rupture, or puncture of the capsule, produce an opacity of the crystalline lens. This, is most commonly accompanied, by an adhesion of the capsule of the lens, to the iris; it is then reduced to a simple case of adherent cataract, and is consequently subjected to all the objections, attendant on the

operation of extraction for that species of the disease.

De Wenzel says, " A blow, or any other ex-
" ternal act of violence, may excite the disorder,
" (cataract,) in one eye only; but in this case,
" the operation seldom restores sight to the
" patient, because other parts of the eye are in
" general injured by the accident, as well as the
" crystalline humour*."

I have frequently seen cataracts proceeding from accidents; these have sometimes been accompanied with amaurosis, but, in by far the greater number of instances, no such affection of the retina has existed. The operations above described for adherent cataract are equally applicable when the disease has been produced by accident; but in most cases where cataract results from an accidental puncture of the eye, the natural pupil closes, and the formation of an artificial pupil becomes necessary.

The Elastic Cataract.

The elastic cataract, as it is called, is, probably, (with the exception of the adherent,) as ill adapted

* See Ware's Translation of Wenzel, page 8.

for extraction as any of the species, which have yet been mentioned; independently of the capsule being always opaque, and very much thickened, the unusual strength, and firmness, of the vitreous tunic, so forcibly binds the crystalline to the vitreous body, that every attempt to extract it in the usual manner, by merely opening the capsule, and making pressure upon the eye-ball, must necessarily fail. In such a case, it is recommended, after the cornea has been opened, to introduce a needle through the pupil, with which the cataract is to be detached, if possible, from its adhesions, and afterwards extracted in the usual manner, by means of pressure; but should the surgeon be unable to accomplish this with ease, he is advised to desist from the operation*.

Mr. Benjamin Bell, in giving his opinion upon the subject of these adhesions, says, "Preter-" natural adhesions of the lens to the capsule of " the vitreous humour can scarcely be distin-" guished by the eye; but they take place very " commonly where cataracts have been originally " produced by, or attended with, much inflam-" mation, and they always render the operations " of extraction and couching difficult. It is this

* See the article Cataract, in Rees's Encyclopedia.

" kind of adhesion, Mr. Pellier imagines, which " prevents the operation of couching from suc- " ceeding so frequently as it otherwise might do; " for, when it takes place in any degree, the " cataract, he supposes, will always rise again on " the needle being removed*." If forceps are introduced, in order to extract this species of cataract, the eye will necessarily be subjected to the dangers already enumerated, as attending the introduction of instruments within the cornea and pupil, as well as to the consequent rupture of the capsule of the vitreous humour; an accident, which is always followed by an escape of that fluid.

The result of my operations in the cure of elastic cataract, (a species of the disease, equally inapplicable to extraction and depression,) is very different. The firmness of the vitreous

* Bell's System of Surgery, Vol. IV. page 314.—Mr. Hey, in his Practical Observations on Surgery, observes, that " some- " times the capsule has a considerable degree of elasticity, and " springs up again immediately, with force, after being de- " pressed. When fragments of the kind are near the circumfe- " rence of the crystalline, and do not materially interrupt the " passage of the rays of light, it is the most prudent method to " leave them, lest the ciliary processes should be injured by " tearing them off."—Page 77.

humour affords such an admirable counter-resistance, to the pressure occasioned during the central division of that opaque body, that the complete division of both capsule and lens, is effected with the greatest certainty, by means of the two-edged needle; the fragments being afterwards placed in the anterior chamber, without any difficulty, are in most cases absorbed in a short time. In no one instance, in the course of my practice, do I recollect my operation having failed, in this species of cataract.

Flat Cornea and convex Iris.

It frequently happens, the anterior chamber is so very small, either from the natural flatness of the cornea, or the unusual convexity of the iris, that there is scarcely space sufficient without wounding the latter, to enable the operator to carry the knife across the anterior chamber, and subsequently, to form the section of the cornea of a sufficient size, to extract the cataract.

This particular case, has been mentioned by most authors who have written on extraction, as one, in which from these circumstances, a great degree

of embarrassment is caused to the operator, and requiring, on his part, the utmost skill and adroitness.

De Wenzel says, " In the eyes of some persons " the iris is convex. The anterior chamber in " such cases is considerably diminished; and it " becomes so much the more difficult properly " to complete the section. It is, indeed, almost " impossible to give it its due extent, without " entangling the iris under the edge of the knife. " Nor can the operator avoid wounding this " membrane, unless he employ the frictions on " the cornea, which I have so repeatedly recommended in this treatise*."

Mr. Ware, under the head, " Inquiry into the " Causes of Failure in extracting the Cataract," says, " In three cases of the cataract which have " lately come under my notice, the cornea was " not only remarkably flat, but the iris appeared " to project forward in the anterior chamber of " the aqueous humour, forming a convex, instead " of a plane surface. In cases of this description " the anterior chamber is so small, that, if an " attempt be made to complete the section of " the cornea by one division, so as to include

* See Ware's Translation of Wenzel, pages 107 and 108.

" in it half the circumference of this tunic, it " will be found extremely difficult, if not impos- " sible, to carry the point of the knife from the " outer, to the inner rim of the cornea, without " wounding the iris*."

Richter says, " The danger of wounding the " iris 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 the albuginea. As soon as the ope- " rator attempted to push the knife on to the " other side, it went in at the pupil†."

The danger of wounding the iris in these cases is sufficiently obvious, without the testimony of such high authorities, when we recollect that, in cases most favourable for extraction, there is always risk of this accident, unless the surgeon carries the knife across the anterior chamber with considerable caution and rapidity. Similar

* See Ware's Works, Vol. II. pages 284, 285.

† See Richter, pages 45, 46.

dangers attend the subsequent completion of the section of the cornea*, which are greatly increased, when the anterior chamber is so small, that the least escape of the aqueous humour, brings the cornea and iris into contact.

It would at first sight appear, from the small space of the anterior chamber, being capable of admitting a few fragments only of the crystalline lens, and from the difficulty and danger which attend the completion of the section of the cornea, that no alternative in this case is left, but that of performing the operation of depression. Notwithstanding these untoward circumstances, I always prefer dividing the cataract when it is possible, and if it is too hard, the extraction of it according to my method of performing that operation, is the preferable method.

In the majority of instances, division of the cataract is practicable; as, for example, when the iris is pushed forwards, it is frequently owing to the unusually large size of the lens, which is then generally soft; were it otherwise, the

* I once saw a case, where the patient, who had been operated upon in a general hospital, had the lower half of the iris entirely cut off, and removed by the surgeon, while in the act of completing the section of the cornea.

iris would become inflamed, in consequence of the irritation, excited by the pressure of a hard body. When the anterior chamber is thus constructed, it is preferable to avoid any attempt to pass many of the fragments into it, but to leave a large proportion of them behind the iris; in which situation, (although much more slowly,) they will eventually become dissolved, and absorbed; the total disappearance of them may be expedited, by a repetition of the operation, as soon as the fragments which have been placed in the anterior chamber, are removed by absorption.

When, however, the cataract is too hard to admit of division, it ought to be pushed through the pupil into the anterior chamber, and extracted in the mode already described: this may be effected with more safety, than when it is attempted in the usual manner, as the opening of the cornea is made in its outer margin, with the point of the knife, and without carrying any instrument across the anterior chamber; should, however, the small space of this cavity be owing to the convex state of the iris, by first placing the cataract into the anterior chamber, the iris

is forced back out of the way of the instrument, so that no more danger exists of wounding it in this, than in ordinary cases.

A small sunken Eye.

In some cases the eye is so small, and sunk within the orbit, as to render it exceedingly difficult, and sometimes almost impossible, to perform the section of the cornea in the usual mode; in order to accomplish it in the best manner, it is necessary, that the plane of the iris should be even with, or projecting a little beyond, the temporal margin of the orbit; without this, the operator cannot get the point of the knife, sufficiently near the inner margin of the cornea, to make the section of proper size, unless indeed he forcibly pulls the eye forward, after the knife is introduced within the cornea, causing thereby, the inevitable escape of the vitreous humour, with a spasm of the muscles of the eye. Where these evils arise, they necessarily cause considerable embarrassment to the operator, as the edge of the knife becomes enveloped within the folds of the iris. In this case, the section, instead of being made at the

proper distance from the junction of the cornea, to the sclerotica, is made considerably anterior to it, and from the knife passing obliquely through its substance, (independent of the risk of opacity of the cornea, which not unfrequently reproduces blindness,) is also made so very small, that the opening is not sufficiently large to admit the free escape of the opaque lens. Attempts are then made to force it through, by increasing the pressure upon the eye, the result of which pressure is most commonly violent inflammation, occasioning, in the majority of instances, a total failure of the operation*.

Mr. Ware says, " The operator should depress " the lower lid with great gentleness, and should " be particularly careful, when the cornea is " tough, to avoid dragging the eye outwards; " from an inattention to which circumstance, I " once saw the capsule of the crystalline humour " ruptured, and the crystalline, together with a " part of the vitreous humour, suddenly expelled,

* Last year I was consulted by an elderly lady, whose eyes were so much sunk, that a very extensive opacity of the cornea resulted, from the section having in this manner been made too small. This accident occurred, notwithstanding the operation was performed, by an oculist of approved skill and dexterity.

" although no external pressure of any other " kind appeared to be used*."

These dangers may always be avoided, by pursuing the operations, of dividing a soft lens for solution and absorption, and placing a hard one into the anterior chamber, for extraction. In the latter case an opening can be made, without any difficulty, at the outer margin of the cornea, with the point of the knife, sufficiently large, to admit of the entire extraction of the lens; and by directing the patient to turn the eye towards the nose, the external part of the cornea, where the opening should be made, is brought sufficiently forward, beyond the level of the margin of the orbit, to enable the operator fully to accomplish his wishes†.

* See Ware, Vol. II. p. 301.

† It is here seen, that the great disadvantage of the patient turning his eye inwards, while making the section of the cornea, experienced in the usual mode of completing that step of the operation, is not only of no injury, but is actually serviceable when the section is made according to my mode of proceeding, the outer margin of the cornea being alone the part operated upon.

Spasm of the Muscles of the Eye, during the Operation.

It is not during childhood alone, that the operator finds it difficult to quiet the apprehensions of the patient. Adults sometimes possess a degree of timidity, which neither their own feeble efforts, nor the most kind, and soothing reasoning of the surgical attendant, can allay. In consequence of which, not only is the patient, frequently unable to keep the eye sufficiently steady to enable the operator, to make the section of the cornea of proper size ; but, it happens, after the section is accomplished, that a spasmodic action of the muscles of the eye takes place, which either causes a spontaneous ejection of the lens, or so great a protrusion of the vitreous humour, and iris, as to hazard the obliteration of the pupil, and the total destruction of the organ. Richter, when speaking on this subject, says, " 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." He also mentions a case of cramp of the muscles of the eye, which occurred when he operated; and adds, " The patient had " lost all command over his eye, and my entreaties " that he should direct it downwards, and out- " ward, 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." Again, " 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 *."

Baron de Wenzel, after contending against the use of specula, relates the unfortunate termi-

* See Richter, pages 48, 80.

nation of the case of a lady, " the muscles of " whose eyes, and eyelids were strongly disposed " to be convulsed on the slightest occasion; she " had a complete cataract in the left eye, which " was operated upon some time past, by an " oculist in Paris. The operation was followed " by very severe symptoms, and, at length, after " the patient had suffered the most excruciating " pains, a suppuration took place in the eye. " After all that I could collect, from the account " given me by the lady herself, and by those who " were present at the operation, of the method " in which it was performed, I conclude that, as " soon as the incision of the cornea was com- " menced, the eye became convulsed, and the " aqueous humour instantly escaped. Upon this, " the vitreous humour, in consequence of the " contraction of the straight muscles, came for- " ward, and forced the iris upon the instrument; " which, being thus entangled, the operator, " perhaps unacquainted with the means of dis- " engaging it, was obliged to make the section " of the cornea too small, in order to avoid " wounding it. The effort necessary to bring " the cataract through this confined aperture,

" no doubt excited a violent inflammation and " pain; and these terminated in a suppuration " and consequent destruction of the whole globe " of the eye*."

Bischoff says, " Some oculists advise, in the " case of a spasm, when the knife is in the eye, " or the point through the anterior chamber, and " such convulsion should occur, to keep the " knife for a moment steady, and to finish the " incision slowly. I have tried at different times " this manner, but always found that the cry- " stalline lens sprung forwards suddenly, and " frustrated every precaution. Experience proves " the success of the operation to be the better, " the more slowly the crystalline comes forward, " because the pupil is the more gradually di- " lated; on the contrary, the quick coming for- " ward of the crystalline lens, by its distending " too suddenly, tends to lacerate, and to destroy " the figure of the pupil afterwards. In the " latter case, the pupil loses its motion, and " changes its figure, and the consequence is a " proportional diminution of the sight†."

* See Wenzel on Cataract, case 9, pages 87, 88.

† See an ingenious treatise on Extraction of the Cataract, by Frederick Bischoff, oculist to His Majesty, in the Electorate of Hanover, and to Her Majesty in England, page 50.

I myself once saw the greater part of the vitreous humour forced upon the cheek of a patient by a violent spasm of the muscles of the eye, after the section of the cornea had been accomplished, and while the operator (the late Mr. Hill) was preparing to proceed to puncture the capsule. Violent inflammation succeeded, and the eye was totally destroyed*.

These dangers are necessarily attendant under such circumstances, upon the operation of extraction, as usually performed; and they can neither be guarded against nor obviated by the operator, as the use of any kind of speculum to fix the eye, would rather increase than diminish the mischief.

On the contrary, in similar circumstances, when the needle is employed, the eye may be steadied with a speculum, without pain, or any ill consequence. Should the consistence of the cataract admit of division, the operation may be accomplished without difficulty, and without any diminution in the probability of success, on account of these objections; should, however,

* Mr. Cline, in his Surgical Lectures, mentions a case in which so violent a spasm of the muscles of the eye, was produced by the introduction of the knife through the cornea, that the point was broken off, and which adhered to the internal surface of that tunic.

the cataract, from its solidity, require extraction, the danger of that operation is in a great degree lessened by my mode of conducting it; in which the facility of returning the protrusion of the iris, should it occur, the horizontal position of the patient during the operation, the situation, size, and mode of making the section of the cornea, (which prevent the danger of the iris being forced before the edge of the knife), all tend to give a much better chance of success than when the operation is performed, according to the older mode of extraction.

Large Pupil with small Lens.

When the pupil is unusually large, and the lens comparatively small, as soon as the section of the cornea is completed, the cataract is liable also to become ejected through the section of the cornea, which is invariably followed by a partial, or total escape of the vitreous humour, and its attendant mischiefs. The escape of the crystalline lens, it is probable, may in some cases be assisted, as asserted by Richter, by the " terror

" of the patient," or by the knife occasioning a " convulsive contraction of the muscles of the " eye, by which the globe is suddenly com- " pressed, and drawn back."

The state of the pupil favouring the spontaneous escape of the cataract after the section of the cornea has been effected, is found to be, when that aperture is of a larger size than usual, and when it dilates with more readiness than is common for it to do. The slightest degree of pressure on the eye, by the action of its muscles, or the fingers of the operator, or his assistant, will under these circumstances, force out the cataract, (the lens being at all times propelled against the iris, whereby the pupil is considerably dilated,) as soon as the support is taken off from the anterior part of the iris, by the division of the cornea, and the escape of the aqueous humour.

Bischoff, when speaking of this case, gives his opinion in the following words: " The " slight irritation which arises from keeping up " the upper eye-lid, and the beginning of the " operation in piercing the cornea, though void " of feeling, particularly with sensitive and irri-

" table patients, often occasion a sudden spasm " in the muscles of the eye, though the cornea " be cut at once, and in the best manner; yet, " if the eye be prominent, with a large moveable " pupil, the crystalline lens, with or without its " capsule, may suddenly gush out, and frequently " with it a part of the vitreous humour. This " case often happens, and sometimes without " detriment to the patient; but there too fre- " quently arises from this, an irregularity, a " prolapsus, and paralysis of the iris, and con- " cretion of the pupil, (synizesis,) by which the " whole operation is frustrated*."

I have reason to believe these accidents happened in two cases I had previously examined, which were peculiarly favourable for the operation, of dividing the lens for solution and absorption. In each case the pupil was large, the lens soft, and the anterior chamber spacious. Although the operation of extraction was performed by one of the most skilful operators in this kingdom, (probably in Europe,) in one patient, both eyes were lost, and in the other, one; in the former, the pupils being entirely closed, and eye-balls shrunk and

* Bischoff on the Extraction of the Cataract, page 49.

wasted; in the other the whole of the vitreous humour had drained away, and the coats of the eye collapsed. Indeed, I have remarked, that the pupils are generally of a larger size, when the lens is of a soft consistence, than when it is of a hard one, rendering this species of case peculiarly fitted for the absorbent practice, and wholly exempting it from the dangers to which extraction is liable, however skilfully performed*. If the lens should at any time be too hard to admit of immediate division, it will be found, by first removing it with the needle into the anterior chamber, and placing the patient in an horizontal, instead of an upright posture, the sudden, and spontaneous expulsion of the cataract will be effectually prevented. Hence, then, whatever may be the consistence of the cataract, in such a state of the pupil,

* I have been informed, by a gentleman who once saw the celebrated Richter operate upon a lad, for cataract, by extraction, that as soon as the section of the cornea was made, the cataract spontaneously escaped, and was followed by so copious a discharge of the vitreous humour, that the coats of the eye immediately collapsed. Had the needle been employed in this case, it is evident this accident could not have happened, and the soft state of the cataract, which always exists in young persons, would have been very favourable to its solution and absorption.

the dangers which I have described, and known repeatedly to happen, are wholly obviated by my operation.

Large Lens with a small Pupil.

It is by no means a rare case, to find a large cataract, and a small pupil, existing in the same patient: at other times, in consequence of not dilating freely, although the pupil is not peculiarly small, great difficulty is nevertheless experienced in effecting the passage of the cataract through it*. The pupil, also, becomes occasionally spasmodically contracted during the operation. The great degree of pressure upon the eye-ball, necessary to force the cataract through the pupil, is justly regarded under these circumstances, by the most eminent authors who have written upon extraction, as one of the most fruitful sources of failure.

Richter says, "We shall sometimes find the "pupil uncommonly contracted, and motionless

* This is sometimes occasioned by the circumference of the capsule only, having formed adhesions to the iris, which adhesions are not perceptible, when the pupil is in an ordinary degree of dilatation.

" at the same time. This is a circumstance " which, if discovered in time, ought to pre- " vent us from undertaking the operation," &c. The danger appears to arise from the necessity of using a great degree of pressure upon the ball, in order to force out the cataract, for he afterwards remarks, " By repeated " pressure, the most violent inflammation results, " when the eye is very apt to run into suppu- " ration." Also, when speaking on the subject of a small section of the cornea, and the fatal consequences resulting from too strong a degree of pressure upon the ball, in order to extract it, he concludes by saying, " 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 con- " cretion of the pupil*."

Bischoff, when speaking on pressure upon the eye-ball, says, " But if the operator should per- " ceive that the crystalline lens, with its capsule, " will not come near to the pupil, and that the " latter is not much enlarged, let him desist in " a moment from the attempt, and bring the eye

* See Richter, pages 56, 81, 83.

" again into a state of rest; for if he should ven-
" ture to press more strongly, the vitreous
" humour would protrude first, leaving the
" cataract with its capsule behind. This is
" the worst event which can attend the ope-
" ration*."

Mr. B. Bell, in enumerating the " material " objections" that occur in the operation of extraction, says, " The lens being often too large " for passing through the pupil, the iris is fre-
" quently much injured by this part of the ope-
" ration, when, in every other respect, it is, " perhaps, very properly performed†." He also gives, in the same work, a long detail of the modes of operating pursued by that celebrated oculist, Mr. Pellier, who, it appears, was a strong advocate for the operation of extraction in every case of cataract, except when the pupil is small, in which he performed the operation of depression‡.

From these quotations, it appears, that the difficulties and dangers which the operator has

* See Bischoff, page 54.

† See Bell's System of Surgery, vol. iv. page 238.

‡ Ibid. page 318.

to contend against, are two-fold: first, in getting the lens through the pupil; secondly, in the inflammation, and frequently fatal consequences, resulting from the pressure upon the eye-ball. These sources of danger are entirely avoided by dividing the lens with the needle, when it is soft, and placing the fragments, for solution and absorption in the anterior chamber; and, when hard, by pushing it with the same instrument, undivided, through the pupil, into the anterior chamber for extraction. This latter step, it is obvious, can be accomplished, in the majority of instances, with infinitely less difficulty, and less injury to the organ, than when pressure is employed, the pupil being previously in a state of dilatation from the application of belladonna, which application also prevents that spasmodic state of the pupil, during the operation, which Richter describes, as being so unfortunate a circumstance*. If, notwithstanding the application of belladonna, the pupil appears too small, to admit the passage of the cataract

* When the pupil is of this small size, I usually employ a much stronger solution of belladonna than ordinary, and apply it only a short time before the operation, instead of over-night, as is common.

through it, the aperture may be first enlarged with the iris scalpel, and the cataract afterwards brought forward by it into the anterior chamber; or, should this state of the pupil be overlooked, until the operation is commenced with the needle in the ordinary manner, the operator has the choice, either of depressing the cataract, or of withdrawing the needle, and, in a few days, (when the puncture in the coats of the eye has healed,) of performing the operation, by first enlarging the pupil, in the manner I have just described.

This beneficial practice of dividing the iris, in order to effect the free passage of the lens, rather than to hazard the dangerous inflammation which necessarily results from making considerable pressure on the eye-ball, did not escape the intelligence of Daviel, who, according to Richter, " did not hesitate to cut the iris, when " it seemed to obstruct the passage of the " cataract." In a note to this passage, added by the translator of Richter's work, he says, " This " is a piece of practice, which Professor Bart not " only 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 on one side " with a pair of small scissors; for he is con- " vinced 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 consequences ever " ensued in any one of them*."

De Wenzel observes, " When the pupil has been " much contracted, I have sometimes been " obliged to enlarge its aperture, by dividing " the iris with a pair of scissors. This operation " is less dangerous than the extension of the " fibres of the iris, occasioned by a very large " crystalline passing through it†."

It will be readily perceived, that the small iris scalpel, which I employ to divide that membrane, and which, by the ingenuity of Messrs. Savigny, I

* See Richter, page 118.

† Ware's Translation of Wenzel, page 132.

have been enabled to reduce to the same size of my two-edged needle, while it possesses at the same time as sharp an edge as can be wished, must occasion much less injury to the eye than the scissors of Mr. Bart, and Baron de Wenzel. After the cataract is once placed in the anterior chamber, it then becomes a case much more favourable for my mode of extraction than even a common one; as, while the opening is accomplishing, the rigid state of the iris prevents its protrusion through the opening of the cornea, and it is thereby less in the way of the point of the knife.

Cystic, or Hydatid Cataract.

Although I have mentioned instances of the successful extraction of this species of cataract, it is, nevertheless, a description of case not well adapted to that particular operation; in consequence of its capacious size, which, dilating the pupil to a great degree, usually occasions so copious a discharge of the vitreous humour, as to hazard failure of the operation by inducing those symptoms, which often result from the loss of that fluid.

While enumerating the causes of the prolapsus of the vitreous humour, Richter says, "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 sprung 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." He adds, "I have known of "one case (of cystic cataract) 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*."

Baron de Wenzel, speaking on the same subject, observes: "The crystalline humour is sometimes "reduced almost wholly to the state of a purulent fluid, in the centre of which a very small

* See Richter, page 6.

" nucleus only remains solid. In such cases, the " capsule becomes disengaged from its adhesion " to the neighbouring parts, and, with the cry- " stalline contained in it, very nearly resembles " an hydatid humour. This species of the cata- " ract is not difficult to be discovered. The " pupil is entirely filled by it, being very often " immoveable, and the crystalline appears to be " very white. A small projection of the iris may " also be observed, which is pushed forward by " the hydatid behind it: and, in consequence of " this, the space of the anterior chamber is dimi- " nished. When an operation is performed on " account of such a cataract, even the slightest " pressure on the eye must carefully be avoided; " it being necessary to restrain, rather than to " encourage the extraction of the crystalline, and " the upper lid must be dropped the instant the " incision of the cornea is finished. This incision " should be performed, as in the two preceding " cases, inwards, and upwards; since, if it be " made on the contrary, in the usual method, " downwards and outwards, the crystalline will " escape with too much rapidity, and the mem- " brane of the vitreous humour being at the same

" time almost wholly destroyed, a large portion " of this humour will escape with it. Whenever " such an accident happens, though the sight may " not be entirely lost, it will, at least, be much " injured*."

The opportunity of operating upon a case of this kind has not offered, but I feel persuaded, that by first puncturing the cyst, in order to empty it of its fluid contents, and afterwards placing it in the anterior chamber for extraction, that this species of cataract may be removed without risking any considerable discharge of vitreous humour, or its attendant consequences. There can be no doubt that the operator will attain these objects; for although the vitreous humour, in some instances, is morbidly fluid, the adhesion of the cataract less firm than is natural, and he may thereby not find a sufficient counter resistance, to divide or puncture it in the usual manner, yet, by first carrying the instrument through the dilated pupil (a strong solution of belladonna having been previously applied), the inner surface of the cornea will enable him to make, with the needle, the requisite opening

* See Wenzel, 176, 177.

in the thickened capsule; after which, he will experience no difficulty, when it is thus collapsed, in extracting it through an opening in the cornea, of a much smaller size than the usual one.

Fluid Vitreous Humour.

The dangerous consequences attending the usual method of extracting the cataract, are very much to be dreaded, when the vitreous humour is partly, or wholly disorganized. Under these circumstances, it happens, that as soon as the section of the cornea is completed, the lens is usually forcibly ejected through it, from the very slight support which the ciliary processes afford to that body, and from the action of the muscles of the eye compressing the ball, and forcing forwards the fluid vitreous humour*. Supposing, however, that the protrusion of the cataract, and of the vitreous humour, does not immediately take place on completing the

* In a case of this kind, on which I operated some years since, in the usual manner of performing extraction, I had no sooner made the section of the cornea, than the lens burst through the pupil and section, and fell on the floor. The whole contents of the eye followed, and of course the operation failed.

section of the cornea, this accident is afterwards unavoidable, from the pressure which is necessary to be made upon the ball, in order to extract the lens; after the removal of which, there is nothing to prevent the escape of the greater part of the fluid vitreous humour, even should no additional pressure be made on the organ by the involuntary action of its muscles.

When we reflect, that one half of the extent of the cornea is cut open, that the crystalline lens which separated the aqueous from the vitreous humour is removed, and that the latter body, being in a perfectly fluid state, from its own gravity instantly escapes partly, if not entirely*; we must at once perceive, that the evils above described must necessarily follow. The effect of a copious escape of the humour is an immediate collapse of the coats of the eye; they become depressed, and instantly sink to the bottom of the orbit, sometimes without much inflammation; at other times, from the admission of air into this great cavity

* The disposition to this result is so great, when the vitreous humour is fluid, that I have repeatedly seen an eye almost drained by the copious discharge of this fluid, through the very small puncture made in the coats of the eye, by my two-edged needle, which is only one-thirtieth part of an inch in breadth.

of the globe, violent inflammation and suppuration ensue*, and. it has happened, from so large a portion of the iris protruding, that an obliteration of the pupil has been the consequence.

Richter, when treating of the causes of the prolapsus of the vitreous humour, says: "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 pres- "sure, and without any fault of the operator." In a note, added to this passage by the translator of Richter's work, he states, "Professor Bart, "in a conversation I had with him, also men- "tioned 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

* In one of my first cases on the Greenwich pensioners, after bringing the cataract into the anterior chamber, and making the section of the cornea in the manner described by Wathen, it was forced back through the pupil; and the vitreous humour, being disorganized, escaped so abundantly on the completion of the section (although no pressure was made on the ball), that I thought the eye quite emptied. On examining it, however, a few days after the operation, I found that the eye had recovered its natural distension, and the upper half of the anterior chamber was occupied by a bubble of air, which in the course of a week or ten days disappeared, and the patient was restored to sight.

" most unfortunate circumstances which could " possibly happen, either to the patient or ope- " rator. When the vitreous humour is in this " dissolved state, it is almost impossible to suc- " ceed with the operation, for even the most " gentle pressure, he says, is sufficient to make " it ooze out from above the lens; and if the " pressure be continued, the whole of that " humour will be discharged before the lens can " be made to move*."

Baron de Wenzel relates a case, where the cataract sunk to the bottom of the eye as soon as he had opened the capsule, in consequence of the vitreous humour being fluid, after fishing for it with a hook for " three quarters of an hour," he at length " harpooned" it, and brought it away; and, what is very extraordinary, notwithstanding the injury the eye must have sustained from these long-continued efforts, the patient recovered his sight.

Mr. Ware, by the following passage, seems, as well as myself, to consider this success as most extraordinary. He says, " The ope- " ration in this instance proved singularly

* Richter, page 102.

" fortunate. But the translator, (Mr. Ware),
" is of opinion, that it ought not to encourage
" a sanguine hope of success in similar cases*."

Mr. Benjamin Bell observes, that " Cataracts
" are not unfrequently attended with a dissolu-
" tion of the vitreous humour, and sometimes
" with an opaque state of it. This variety of the
" disease is, for the most part, produced by vio-
" lent inflammation. It is easily distinguished,
" by those accustomed to an attentive examina-
" tion of the eye†, and it is particularly necessary
" for operators to be well acquainted with it;
" *for no operation, either extraction or depression,*
" *should ever be advised for it. The operation has*
" *never, in any instance of this kind of cataract, been*
" *known to succeed;* and, for the most part, Mr.
" Pellier observes, it is productive of very dread-
" ful pain, and the most violent degree of inflam-

* See Ware's Works, second volume, page 311, 312.

† Where the vitreous humour is disorganized, and partly absorbed, it is sometimes shewn by the diminished size of the globe and by its soft flaccid feel, when there is no difficulty in ascertaining the morbid state of this body, previous to the operation; but where it is in this state, without being lessened in quantity, the natural distention of the coats of the eye is preserved, and consequently the fluidity of the vitreous humour cannot be ascertained, until some opening in them is made, through which it can escape.

" mation that he ever met with. In general, too, " the pain, and inflammation, induced in this man- " ner remain fixed and permanent, without yield- " ing in any degree to the usual remedies *."

From these quotations, and many others which could be adduced, were any additional authorities necessary, it is obvious, that, in this disorganized state of the vitreous humour, the most dangerous consequences, must in the majority of instances, result from the operation of extraction; and this fluid state of that humour, experience convinces me, occurs much more frequently, as I have elsewhere remarked, than practitioners are in general aware of, from its having been so little noticed by authors. I continually meet with it in persons of all ages, sometimes in patients under twenty years of age, some of whom I have no doubt were born with it; sometimes in middle age, and so frequently in old persons, that I am inclined to consider it as one of the attendants of old age. It exists more especially, after inflammation of the iris, and is therefore very frequently met with, in cases requiring an artificial pupil.

* Bell's System of Surgery, fourth volume, page 313.

When the lens is soft, it should be freely divided, and the fragments will spontaneously sink to the bottom of the eye, where they will speedily dissolve. But, in a case of solid lens, it should be extracted, after having been first placed in the anterior chamber. During the whole of the operation, no pressure is necessary to be made on the globe of the eye; and the patient being placed in an horizontal position on his back, instead of sitting erect, there is no apprehension to be entertained, of a dangerous escape of the vitreous humour, unless the operator, or his assistant, make undue pressure, or the patient acts very forcibly with the muscles of the eye, so as to compress the eye-ball; as the vitreous humour will not spontaneously rise, in opposition to its gravity, for the same reason, that it must escape, were the patient in an upright position. If the iris should protrude, through the section of the cornea, it may be readily reduced in the manner already described.

I have remarked, that the section of the cornea, frequently heals even more quickly, when the vitreous humour is disorganized, than when it is in a healthy state; as, in the latter case, the vitreous tunic sometimes protrudes between the lips

of the cornea, and prevents its healing so immediately as it otherwise would do, whereas, in a disorganized state, no such protrusion can occur; and, unless the iris is forced through the section, subsequently to the operation, there is nothing to prevent its healing at once.

It has been proposed, in order to avoid the morbid consequences, attendant on the too-copious discharge of the dissolved vitreous humour, to make the section of the cornea upwards, instead of downwards, which at the first view, appears fully adequate to answer the intended purpose. This upper division, cannot however, always be effected, as, when the eye is much sunk within the orbit, it is sometimes almost impossible, to make a section of the cornea, of sufficient size, even in its lower part, while the difficulty is necessarily greatly increased, when attempted upwards. Supposing, however, the operator were, at all times, capable of effecting the superior section of the cornea, unless he uniformly performed it in the same manner, it would little avail him in this particular case, as, in a large majority of instances, he is ignorant of the morbid change having taken place, until after the section

is completed, the coats of the eye being as fully distended by the fluid vitreous humour, as when that body is in a state of health; consequently, he is unable, by any precautionary step, to guard against an undue escape of it*.

On the contrary, the operator, by my mode of conducting the operation, is at all times prepared to prevent the escape of the vitreous humour, whether fluid, or otherwise, from no degree of pressure being employed, and from the horizontal position of the patient.

By making a vertical opening of the cornea at its outward segment, the operation is more easily and more effectually acccomplished, than were it attempted at its upper part; the vitreous humour is also less liable to escape after the operation†

* The natural firmness, however, of the eye, is not, as has been already stated, always preserved, in cases where the vitreous humour is morbidly fluid, for where a part of it becomes absorbed, as is sometimes the case, the eye is evidently smaller in size, and softer to the touch; but as this state of disease, is almost always, connected with adhesions of the capsule, to the iris, there will be great uncertainty of success, by the operation of extraction.

† Baron de Wenzel says, "The best advantage I shall mention, as arising from this oblique mode of dividing the cornea, "is, that the vitreous humour is less likely to escape through "a wound thus made, than when the incision is made horizontally."—See Ware's translation of De Wenzel, page 114.

than when the section is made in the usual manner at the bottom of the cornea.

These circumstances, together with the facility, with which the iris may be returned, within the section of the cornea, should it protrude, either from pressure on the ball, occasioned by the involuntary motion of its muscles, or from any escape of the vitreous humour, and which return cannot be so certainly effected in the usual manner of performing extraction, evidently concur to render my mode of extraction, a safe, and a successful operation, in cases of fluid vitreous humour; which description of case, the warmest eulogists of the older method, do not hesitate to admit, and which, every experienced oculist well knows, is one, in which the greater part, or the whole contents of the eye-ball, escape with the cataract in almost every instance, when pressure is made in the ordinary manner to extract it, even should this escape not spontaneously occur, immediately on the completion of the section of the cornea.

CHAPTER III.

Sect. 3.

Case, in which the usual Operation of Extraction may be considered most applicable;—Enumeration of the Dangers to which such Operation even in this Case is liable;—and the readiness with which they may be avoided by the Practice of the Author's Operations.

I HAVE now detailed the different varieties of cataract, for the removal of which the strongest advocates of extraction acknowledge that operation to be ill adapted. Having also shewn by what methods I conceive the causes of failure may in general be avoided, I shall next proceed to inquire, in what particular species of the disease, the operation of extraction, as usually performed, may be considered most applicable, and likely to be attended with a reasonable share of success. It is, without doubt, in cases of solid cataract, unconnected with any morbid adhesions, or opacity of the capsule, in which the size of the lens, and pupil, bear a relative proportion to each other, and in which, the anterior chamber, possesses a sufficient degree of capacity. But, even under these favourable circumstances, the opera-

tion is liable to accidents and dangers, which it is frequently beyond the power of the utmost skill in the operator to prevent. These dangers, as in the description of cases already examined, shall be noted from the works of those authors, who have written most strongly in favour of extraction.

The first source of failure to be considered, is wounding the iris, in making the section of the cornea. This accident may happen, either, from an escape of the aqueous humour, while carrying the knife across the anterior chamber, previously to its point reaching the inner margin of that tunic, or subsequently, from the iris slipping under the edge of the instrument, in bringing it out at the bottom of the cornea, at the conclusion of the section.

Richter, when describing the manner of cutting the cornea, says: "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 contact with it, and it becomes almost im- "possible to finish the incision without either

" lacerating this last-mentioned membrane, or the " internal surface of the cornea; besides, the in- " cision cannot be made equal, and the whole " operation fails*."

Baron De Wenzel, when speaking on the same subject, observes. " By this mode of making " the section through the cornea, (vertically,) " the operator will prevent the too-hasty effusion " of the aqueous humour. This is an important " point, since, whenever it happens, the iris, get- " ting before the edge of the knife, is in danger " of enveloping it; and, in this case, unless the " mode of liberating it, which I have indicated " by gently rubbing the cornea, be adopted, it is " almost impossible to avoid wounding this mem- " brane†."

Mr. Ware remarks, in a note to the above passage: " The premature effusion of the aqueous " humour during the punctuation of the cornea, " is so dangerous an accident, that no means, " which have any tendency to prevent it, should " be neglected." He adds, under the head *Inquiry into the Causes of Failure in Extracting the Cataract:* " The second accident in this opera-

* Richter, page 33, 34.

† See Ware's translation of De Wenzel, page 112.

" tion, which I shall now notice, is that of wound-
" ing the iris with the cornea-knife. The princi-
" pal cause of this accident appears to me, to be
" a premature discharge of the aqueous hu-
" mour*."

Bischoff observes, that "Particular care should
" be taken by the operator, that he performs this
" incision well, that the aqueous humour does not
" run out before the whole incision be finished. If
" the aqueous humour flows out sooner, the an-
" terior chamber collapses, while the knife is
" still in it; the iris becomes then close to the
" cornea, and comes before the point, and under
" the edge, of the knife. In this case, it is im-
" possible to bring the knife, through the anterior
" chamber, to the inner corner of the eye, with-
" out hurting, or wounding the iris; and to con-
" tinue the incision, in the collapsed cornea, with
" the same knife, would make the wound too
" high and uneven, and by this means the whole
" operation often miscarries†."

Mr. Wathen says, "If, in the puncture of the
" cornea, there be the least interruption, or stop
" in the progress of the knife, the consequence

* See Ware's Works, vol. ii. pages 291, 292.

† See Bischoff on the Extraction of the Cataract, page 41.

" will be, that, before it has penetrated through " the cornea, if not even before the point has " reached the other side of it, a great part, if not " the whole, of the aqueous humour, will have " escaped. Hence, also, this further consequence " will follow, that the cornea, iris, and knife, must " of necessity come into immediate contact, so " that the point or edge of the knife will, it is " most likely, be entangled with the iris; under " which circumstance, it will be next to impos- " sible to finish the punctuation, much less the " section of the cornea, without wounding the " iris. Whenever this unfortunate accident " occurs, the best way is, immediately on the " discovery of it, to withdraw the knife, before " it has done any mischief, and to relinquish the " operation entirely for that time, waiting some " favourable opportunity in future, when it may " be performed with better success*."

None of the dangers here enumerated, attend the escape of the aqueous humour, when the opening in the cornea, is effected in the manner which I recommend; as that fluid always becomes evacuated as soon as the puncture of the

* See Wathen's Dissertation on Cataract, pages 101, 102.

cornea is made. If from any cause, during the enlargement of the opening, a protrusion of the iris should occur, it may be easily returned by closing the eye-lids, and using a little friction on them; and as both the point, and back, of the curved bistoury, are blunt, and one side of its blade convex, the iris cannot be punctured, or cut, provided the operator employs the requisite care, in finishing this step of the operation.

It sometimes happens, in the most favourable cases for the usual operation of extraction, either from the unsteadiness of the patient's eye, or of the operator's hand, that, in the expedition necessary to be used, while carrying the knife across the anterior chamber, in order to prevent the escape of the aqueous humour, that the point of the instrument either passes behind the pupil, and thereby endangers slitting of the iris directly across its inner half*; or, by the sudden movement of the

* I once saw an oculist of great experience, perform the operation of extraction, when, from some cause, he passed the point of the knife, through the pupil behind the iris, which he would have slit across to its nasal margin, had he not fortunately perceived what had occurred, and withdrawn his knife; after which he completed the section by the tedious process of introducing the probe-pointed bistoury, and cutting through the inner part of the cornea with a lancet, upon the blunt point of that instrument. He completed the incision in the usual manner, by terminating it as near the inferior margin of the cornea as possible.

eye inwards, at the very moment the knife is entering the cornea, it takes an oblique direction through the lamellæ of that tunic, whereby the section is made a great deal too small. This latter result may also happen, by the operator, inserting the point of the knife, below the line of the transverse diameter of the pupil, or by completing the section, above the inferior margin of the cornea.

In respect to the danger, of carrying the point of the knife behind the pupil, it is obvious that it can never happen when the method of enlarging the opening of the cornea is pursued, which I recommend, as the point of neither of the instruments employed, is introduced even so far as the outer edge of the pupil*. It is equally impossible for the knife to pass obliquely through the lamellæ of the cornea, from the very small portion of its point, which passes through that tunic, and which, in

* When I first began to practise this operation, I was in the habit of completing the opening with the instrument with which I made the puncture, but soon changed it, from finding it at times extremely difficult, to avoid wounding the iris, with the sharp point of the knife. In one instance this actually occurred, and produced a closure of the pupil, which required my forming an artificial pupil, to restore the patient's sight.

every instance, can, with the utmost certainty, be introduced close to, and parallel with, the iris.

The directions given by Mr. Ware, to make the opening of the cornea, nine-sixteenths the extent of its circumference, in order to afford a free passage to the lens, without occasioning much pressure upon the ball, are, doubtless, very judicious, when the lens is of a large size; but the danger of a protrusion of the iris, and vitreous humour, during, and subsequently to the operation, is always in proportion to the size of the opening, and, in a great number of instances, the size of the cataract, does not require so large an opening as he recommends.

In operating according to my plan, the surgeon, by first placing the cataract in the anterior chamber, has the advantage, not only of ascertaining its size, whereby he is enabled to adapt the extent of the opening in the cornea, but he can also at all times, safely extract it through a comparatively smaller opening, than is required in the older operation, in consequence of employing a hook, to extract the cataract, instead of using pressure on the ball. Although the

nucleus of some cataracts, does not admit of immediate division, yet their external surface is of a soft consistence, and therefore easily admits of a considerable degree of compression, in their passage through the opening in the cornea. One of many cases of this kind, occurred in an old man, on whom I operated, in the presence of Mr. Oliver, a respectable surgeon of Brentford, when the cataract was extracted, in the most satisfactory manner possible, through an opening in the cornea, of three-tenths of an inch; the whole circumference of that tunic, measured thirteen-tenths, so that, instead of one-half or nine-sixteenths, there was not one-fourth of it opened. The pupil, in this case, after the extraction of the cataract, instantly returned to its natural form and size, and, notwithstanding a slight protrusion of the iris accidentally occurred, some days after the operation, the eye was sufficiently recovered at the end of a fortnight, to enable the patient to return to the country. At the expiration of a month, there was not a vestige of inflammation remaining, and vision was as perfectly restored, as it ever can be after the removal of cataract, the patient being able to read the

smallest print, with the assistance of proper spectacles.

The necessity, of making an opening sufficiently large in the cornea, in order to effect a free passage of the lens, without considerable pressure on the eye-ball, is so frequently mentioned, and insisted upon, by all the authors who have written on the old method of performing extraction, that this caution must have been regarded, as a most material one to be attended to. The obstacles, however, which frequently occur, (even in the most favourable cases for the operation,) in perfecting this opening, very frequently cannot be surmounted, and can be remedied, only by enlarging the section of the cornea, which has been thus incompletely formed. The patient, in this case, has sustained all the risks attendant on carrying the knife across the anterior chamber, and completing the section of the cornea, and the surgeon, is at length, obliged to resort to that mode, which I always employ, and which, if he had adopted in the first instance, would have entirely exempted the patient from these dangers.

In order to shew the importance which has

been attached, to the necessity of performing this part of the operation with precision, I shall make the following quotations. Richter, when speaking of the danger of cutting two-thirds of the cornea, says: "At the same time, it is of the utmost "importance to know, that the surgeon is ex- "posed to much greater difficulties than those just "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 prevent the easy introduction of "such instruments as are necessary to open the "capsule, or to extract any part of the lens that "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 along 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 any one of them, for it is not always

" in our power to follow exactly the rules which " art prescribes, less harm will be done by di- " viding rather more than half, than by dividing " less than one half of the cornea*."

Wenzel, after giving a case where the cataract made about a quarter of its way through the pupil, but advanced no further, when he was obliged to extract it with the curette, adds, " From this case " we may collect how essential it always is, to " make a large incision through the cornea, in " order to give the pupil sufficient room to dilate " with ease. There is no reason, under such cir- " cumstances, to apprehend a staphyloma, as has " been supposed by some authors. I have ob- " served, on the contrary, that the wound has " healed with less difficulty, and staphylomas " have been less frequent, than when the section " of the cornea has been thus large."

Mr. Ware gives his opinion in a note to the above passage: " The failure of the operation of ex- " tracting the cataract, is often owing to the small- " ness of the incision made through the cornea. " The obstacles the crystalline meets with, in

* Richter, page 54.

" coming through this aperture, produce inflam-
" mation, suppuration in the eye, pain, opacity in
" the cornea, and many other accidents, which
" would happen less frequently, even if a wound
" were made through the iris."

Mr. Ware again says, " It is obvious to every
" one, that if the incision of the cornea, through
" which the cataract is to be extracted, be not
" somewhat larger than the cataract itself, a de-
" gree of violence will be required to bring it
" through; and, in consequence of this, if the
' cataract be not altered in its figure, the wound
" in the cornea will be forcibly dilated, and the
" edge of the iris, which forms the rim of the
" pupil, be compressed between the cornea and
" the cataract, and be liable either to have some
" of its fibres ruptured, or to be otherwise so
" much injured, as to excite a considerable de-
" gree of inflammation, and ultimately to hazard
" a contraction, or a closure of the pupil *."

Mr. Wathen observes, that, " in making the
" punctuation of the cornea, care should be
" taken, on the one hand, not to pass the knife
" so obliquely inwards, that its point may wound

* Wenzel on Cataract, pages 135, 281.

" the iris; and, on the other, that it be not done " so superficially, as to insinuate itself between " the laminæ of the cornea, and so not make any " aperture at all, or too small a one, through it, " into the anterior chamber of the aqueous hu- " mour. Either of these accidents may defeat " the whole operation; but the latter is the least " dangerous of the two; for the defect arising " hence, may, in some instances, be rectified by " enlarging the orifice with a pair of curved " scissors, or by a fresh punctuation*.

Bischoff, on the subject of making the iris recede after it has protruded, remarks, " If, not- " withstanding all these endeavours, the iris " will not recede, be not precipitate; turn not " the edge of the knife more towards the cornea " to finish the incision: it never can in this man- " ner be made as it should be, and you endanger " the patient; for the ciatrix will, after the " operation, appear too high, and on its size and " situation depend the sight†."

The second stage of the operation of extraction, as usually performed, consists in introducing the

* See Wathen, page 100.

† See Bischoff, page 46.

kisistome, or some other appropriate instrument, under the flap of the cornea, in order to make an opening in the capsule of the lens, through which it may pass freely during its extraction. This step of the operation, although by far the most easily effected of any, is, nevertheless, not always exempt from danger, which is particularly noticed by Richter, who says, when speaking on the subject, " I do not assert that this step of the ope-
" ration, I mean the opening of the capsule, is
" without its difficulties and dangers. If the eye
" should happen to move suddenly, while we are
" introducing the instrument into the pupil, there
" is a great risk of wounding the iris *." The same intelligent author very particularly inculcates the necessity of making a large opening in the capsule, as when fragments of the cataract are left within the capsule, during the operation of extraction, it becomes necessary to remove them with the scoop, adding, that from the want of a sufficiently large opening, " he has seen that
" every effort to extract the remaining fragments
" has been in vain," which he supposes is occasioned by the scoop's not being able to reach

* See Richter, pages 65, 66.

them, in consequence of the aperture in the capsule, not having been made large enough for the passage of the instrument.

There is another danger mentioned by Mr. Ware, who says, when treating of the causes of failure in extracting the cataract, "A portion of the "vitreous humour may also be discharged, in "consequence of an improper mode of puncturing "the capsule of the crystalline humour." Again, "But if the puncture be made nearer to the cir- "cumference than the centre of the pupil, as the "crystalline is both thinner, and softer in this "part, the instrument will be liable to pass "through both sides of the capsule, and to pierce "at once into the substance of the vitreous hu- "mour. In such a case, the vitreous humour, "(which is much less firm in its consistence than "the crystalline, and often almost fluid,) having "no longer any barrier to prevent its discharge, "is liable to be forced out, in a considerable "quantity, by the action of the eye-lids alone; "and, when pressure is afterwards made, to "bring the cataract through, its quantity will be "much increased, and the cataract, instead of "coming forward, will recede from the pupil,

" and either will descend toward the bottom of " the eye, or will move to the side opposite to " that, where the faulty puncture is made. Every " attempt, afterwards, to bring the cataract " through, by the application of pressure on " the eye, must prove not only fruitless, but " injurious," and the only way, Mr. Ware goes on to explain, is, to extract it with the curette, or hook, &c., which, he adds, " may cause an " additional discharge of the vitreous humour*."

In addition to the dangers, which are mentioned by these eminent authorities, is, the liability of the iris to protrude, either from the spasmodic action of the muscles of the eye or lids, the introduction of the instrument to open the capsule, or by pressure accidentally made on the globe of the eye, by the operator, or his assistant, during this stage of the operation.

These dangers are effectually prevented, by first placing the hard and solid cataract, with the needle, in the anterior chamber ready for extraction, by using the concave speculum, in order to steady the eye, and by the previous application of a weak solution of the belladonna. No opening having been made in the

* See Ware's Works, vol. ii. pages 301, 302.

cornea, the danger, therefore, of wounding the iris, mentioned by Richter, the escape of the vitreous humour through the opening of the edge of the capsule, by Ware, and the liability of a protrusion of the iris, are all avoided, as no person, at all accustomed to the use of the needle, could, under such circumstances, wound the iris; but, even supposing, that through unsteadiness or inattention, on the part of the operator, the needle should then puncture that membrane, no serious consequences would result from the slight degree of injury it could thereby sustain; whereas, should the iris be wounded after the section of the cornea is completed in the usual manner, an involuntary spasm of the muscles of the eye would be very likely to occur, which would at once force out the cataract, and probably with it the greater part of the vitreous humour, and we should find that either protrusion of the iris, obliteration of the pupil, or inflammation, and its attendant evils, would most certainly ensue.

The third and last stage of the operation, is, " the extraction of the cataract," which consists in making sufficient pressure upon the globe of the eye, as shall force out the opaque lens through

the aperture which has been made in the capsule, and afterwards through the pupil, when, if the section of the cornea be of sufficient size, and no accident happens, the cataract falls on the cheek, and the operation is considered as happily performed.

Extracting the cataract, even in cases very favourable for the operation, is the step which may be justly considered as the most dangerous of the three, from the liability of the vitreous humour to escape, after the lens has been forced through the pupil, which escape is most commonly followed by a protrusion of the iris, causing a partial or total obliteration of the pupil, and secondary cataract, &c.

These dangers are frequently increased, by other states of the eye, which either, cannot be ascertained by previous examination, or otherwise, are the result of the operation when performed in cases apparently the most favourable. First, by adhesions of the circumference of the capsule to the iris, the mobility of the pupil being still preserved. Richter, when speaking on " concreted" or adherent cataract, says, " 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 ope- " ration, 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 dis- " covered beforehand. The surgeon will deceive " himself exceedingly, if he expects to obtain his " end in this case by increasing the pressure on " the eye; during some time, the cataract may " remain quite motionless, but at last it springs " suddenly forward, together with 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*."

Secondly, by the adhesion of the lens to the internal surface of the capsule. According to Richter's opinion, " the concretion of the lens " within the capsule, is not capable of being " disunited," for, he says, " How is it possible " to bring any instruments into the capsule, " which can separate both the anterior and

* Richter, page 93.

" posterior surface? All that can be done, in " order to restore the patient to his sight, is, to " extract both lens and capsule*."

Thirdly, by the opening in the capsule, more especially when it is morbidly thickened, being made too small. Richter, when describing the method of opening the capsule, says, " I remem- " ber 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 circum- " stances, which could make me suppose a con- " cretion 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 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 where the

* Richter, page 95.

" 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 at- " tempted*."

Fourthly, by " the pupil contracting itself most " violently, immediately upon cutting the cornea," which, Richter observes, " sometimes happens," and adds, " This is a most unhappy accident, for " all 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 †."

These different states, oblige the surgeon to make a degree of pressure upon the eye-ball, in order to effect the extraction of the opaque lens, which frequently produces inflammation, and, by rupturing the vitreous capsule, occasions a considerable escape of that body, the usual consequences of which are a greater or lesser protrusion

* Richter, pages 75, 76.

† Ibid. page 81.

of the iris, an opacity of the crystaline capsule, and a proportionate diminution, or a total obliteration, of the pupil.

At other times, a protrusion of the iris, with a correspondent injury to the pupil, takes place by the spontaneous ejection of the cataract, as soon as the section of the cornea is completed,—by a spasmodic action of the muscles of the eye, or by an undue pressure from the operator, or his assistant; or by the escape of the vitreous humour, when it is disorganized, which disorganized state, is frequently found to exist, when, to all appearance, the case was most favourable for extraction*.

This protrusion of the iris not only alters the size and form of the pupil, but, from its situation between the lips of the cornea, sometimes excites the most violent pain and inflammation of the eye, which, continuing for weeks, and even months, at length often terminate in an opacity of the cornea, sometimes sufficiently extensive to defeat the operation†, even if the contraction

* See the articles on a large Pupil and small Lens, and the disorganized Vitreous Humour, pages 191, 204, of this work.

† During a visit to Ireland, in 1811, where I was called to perfrom operations for congenital cataract on three children belong-

of the pupil, and the opacity of the capsule, (constituting secondary cataract,) arising from the escape of the vitreous humour, did not prevent the patient's restoration to sight. Besides these consequences, a large protrusion of the iris beyond the eye-lids, prevent them from closing, and may occasion the anterior part of the eye to assume a conical form, while the irritation excited by friction against this protruded part, is a source of continued pain and suffering to the patient. I have seen myself instances of this kind *, and Bischoff's experience confirms my

ing to the same family, I successfully operated upon a clergyman of great respectability, seventy years of age, for artificial pupil; on whom the operation of extraction, performed by Baron de Wenzel, had failed, twenty years before, in consequence of a protrusion of the iris, and an opacity of the cornea, covering the pupil, which resulted from it. The new pupil being made at the upper part of the iris, opposite to which the cornea was transparent, the patient soon obtained such a degree of vision, that in a few months afterwards, assisted by cataract glasses, he wrote me a letter, in as good hand-writing as could be expected, from any person of his age, whose sight had never been impaired.

* See Case XXIX., in my work on Diseases of the Eye, in which an instance is related, where, after the operation of extraction had been performed by an eminent oculist, "almost the whole "of the iris became protruded through the section of the cornea, "and formed a tumour of a conical shape, which extended "considerably beyond the edges of the lids, and prevented

own in this respect, for, in enumerating the accidents which result from the operation, he says, " This protrusion of the iris occasions pain for " ever, which is sometimes vehement, and prin- " cipally increases with the motions of the eye; " the fallen part of the iris rubbing continually " on the eye-lids*."

A protrusion of the iris, from what has been said, may occur, either before, or after the expulsion of the cataract, or at any time, before the cicatrization of the section of the cornea is completed.

From the mischievous consequences which ensue, it has been regarded as an object of great importance, by those surgeons who practise extraction, to prevent as far as possible the occurrence of this morbid symptom. With this view, different modes of effecting the section of the cornea have been proposed. Richter has observed, " that, the " greater the opening in the cornea, the more

" their becoming at any time closed. The patient suffered " very acute pain in this eye for several months after the ope- " ration, and for three years it proved a continual source of " irritation and uneasiness, which had not entirely ceased when " he consulted me."

* See Bischoff, page 63.

" 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 re- " traction of the coats of the eye, which takes " place as soon as the incision is made*. In order to obviate the objection to Daviel's practice, against which he is here contending, he advises *one-half*, instead of *two-thirds* of the cornea, to be opened; notwithstanding which alteration, the lower segment of the cornea, being the part cut open, it is obvious, an escape of the vitreous humour will still frequently ensue, and be succeeded by a protrusion of the iris.

Baron de Wenzel, in certain cases, with the same view, recommends the section of the cornea, to be made, upwards and inwards, instead of downwards; but this mode, I have already shewn, cannot frequently be accomplished, more especially when the eye is sunk deep within the orbit. Indeed, of whatever size, or in whatever situation, the opening of the cornea is made, the iris may still be forced through it, if any consi-

* See Richter, page 53.

derable pressure is made upon the globe of the eye, as the iris at all times falls forward, and comes in contact with the cornea, as soon as the aqueous humour is evacuated. I have seen two cases, in which the section had been successfully accomplished, in the upper part of the cornea, which nevertheless required the formation of an artificial pupil, in consequence of a large protrusion of the iris, which had subsequently taken place: and I have frequently known a considerable protrusion of the iris follow even the small-sized puncture made in the cornea, by the point of a knife, or a pair of scissors, accidentally running into it.

Mr. Wardrop, in order to prevent a protrusion of the iris, has ingeniously devised a mode of making the section of the cornea, by introducing the point of the knife, at the usual distance, above the transverse diameter of the iris, a line from the external margin of the cornea, bringing it out at a similar distance from the internal margin, and completing the section, half way between the inferior margin of that tunic, and the lower edge of the pupil*. By these means, the iris is unquestionably supported at its lower

* See the Edinburgh Medical and Surgical Journal, for January, 1809.

part, and, agreeably to the doctrine of Richter, both it, and the vitreous humour, are less likely to become prolapsed; but as the section is by this mode, of a much smaller size than is directed by the eminent authorities who have heretofore been quoted, it becomes a question, whether, in avoiding one evil, a much greater is not incurred, by subjecting the patient to the dangers already enumerated, resulting from forcing a large cataract, through too small an opening in the cornea.

From what has been stated, it appears, that one of the chief causes of failure in this stage of the operation, arises from the degree of pressure, which is often necessary to be made, upon the globe of the eye, in order to force the cataract through the pupil, so that, either a large protrusion of the iris and vitreous humour, or, if the pressure has been considerable, and long continued, inflammation and suppuration of the eye, ensue.

By using the needle, and first placing the lens into the anterior chamber, through the pupil, which has been previously dilated, and afterwards extracting it with the hook, all pressure on the ball is avoided, as well as the morbid consequences resulting from it, while the protru-

sion of the iris, arising from the spontaneous ejection of the lens, cannot in any instance occur. Should it subsequently protrude, in consequence of the spasmodic action of the muscles of the eye, or from any other cause, it may be easily replaced, within the section of the cornea, by using gentle friction on the lids, or by a small instrument, with a forked point, which I employ for that purpose.

In consequence of the section of the cornea, being made vertically on the outer part, and its inferior part being left untouched, the iris and vitreous humour are thereby supported at the bottom, and therefore are not so likely again to protrude, after the patient sits erect, as if the section were made at the lower part in the usual manner. Indeed, without some pressure of the muscles of the eye or lids, or unless the bandage is tied too tight, there is very little danger, either of a further protrusion of the iris, or escape of the vitreous humour. If, however, from vomiting, coughing, sneezing, or any other cause, the former accident should occur, and the pupil, in consequence, become either much contracted, or even wholly obliterated, the vertical section of the

cornea, possesses this additional advantage over the transverse, that the subsequent division of the iris, for the formation of an artificial pupil, will be more easily accomplished, and of a better form, by enlarging the original pupil, than if the remaining portions of the iris were cut across, as must be done, when the operation for artificial pupil is performed, in consequence of the iris having protruded through a section of the cornea, which has been made at the inferior margin of that tunic*.

After the body of the lens, is successfully extracted, in the usual manner of performing the operation of extraction, gentle friction is directed to be made upon the cornea, when the lids are closed, in order to bring into view any

* De Wenzel, who carried the knife through the anterior chamber in the usual manner to effect the section of the cornea, preferred making it vertically instead of transversely, and gives the following as one of the reasons for this preference: "The operator "will escape the danger of unnecessarily wounding the adjacent "parts, such as the caruncula lachrymalis, the angular vein, "the nose, and the tunica conjunctiva. These accidents are "very likely to happen, when the incision is made horizontally; "that is, in a line with the great and small angles of the eye, and "more especially in those cases where the eye is drawn inward, "which is frequently the case, when the patient is much agitated." See De Wenzel on Cataract, page 112.

fragments of cataract, which may have been left in the capsule, behind the iris, and which, if not removed, would, in all probability, mount up, and again obscure the pupil. These fragments are to be removed with the scoop, which, being introduced under the flap of the cornea, is carried through the pupil into the cavity of the capsule; the fragments are then, by degrees, and by repeated introductions of the instrument, brought away. This step is attended with the hazard of rupturing the crystalline and vitreous capsules, and the consequent discharge of the vitreous humour: as without great care, the end of the scoop will perforate these membranes *, or the most gentle friction with the finger upon the eye-lids, may, in a nervous patient, endanger the production of spasm of the muscles of the eye, which would be immediately followed by similar consequences. In other cases, as Mr. Ware remarks "the extreme "irritability to which some eyes are subject, "renders the introduction of any kind of instru-"ment after the cataract is extracted, not only "difficult, but hazardous †."

* See Ware, page 307.

† Ibid, page 313.

These dangers also, are effectually avoided, by my mode of operating. By the attention which is bestowed, in lacerating the whole of the capsule of the lens, to the full extent of the dilated pupil, after the opake lens is pushed through it, I effectually prevent the lodgment of any fragments of the cataract within the capsule. As soon as the extraction of the cataract is completed, these fragments float, either into the anterior, or posterior chamber. When they are situated in the anterior chamber, they become dissolved, before the other parts of the eye, have recovered the effects of the operation; and when they remain behind the iris, although it is true, that the solvent powers of the vitreous humour are less active, than those of the aqueous, the end will nevertheless be the same, requiring only a longer time. If, however, the operator be doubtful on this point, or the patient become anxious and impatient, the pupil may be cleared with the greatest certainty and expedition, by introducing the needle a second time, which operation is of a slighter nature, and even more expeditiously performed, than that for capsular cataract.

It may perhaps be said, if solution of these

fragments is so certain after my mode of performing extraction, that it is an useless danger to meddle with them, when the usual mode of extraction is performed. The circumstances, however, it must be observed, are far less favourable for their disappearance, in the latter, than in the former case. In the latter, be it recollected, it is the anxious endeavour of the operator, not to wound the posterior part of the capsule of the lens; but when the anterior part is merely opened, for the escape of that body, there is a liability of its again closing, so as to prevent the absorption of those fragments, whereas, in my operation, the capsule is either altogether extracted with the lens, or subsequently cut in pieces with the needle, which renders the fragments, completely exposed, to the action of the aqueous or vitreous humours, either of which, it is well known, will dissolve them.

Another, and a still more important reason, for the entire removal of these fragments, in the usual mode of performing extraction, is, their liability to float into the anterior chamber, getting between the edges of the wound of the cornea, and thereby preventing the healing of the section by the first intention: when such violent inflammation, is by them

excited, that, as Mr. Ware remarks, it will probably either terminate in a "contraction of the pupil," or, as he has sometimes seen, in "suppuration, and consequent sinking of the whole organ*."

No such apprehensions can be entertained by my mode of operating; the opening of the cornea being made vertically, on the outer side, the fragments, if they float into the anterior chamber, will, from their gravity, necessarily sink to its bottom, where the cornea is sound and entire; whereas, in the usual mode of extraction, it is there the wound is situated, when the fragments will necessarily produce the mischiefs enumerated by Mr. Ware.

The edge of the lower eye-lid sometimes becomes inverted, insinuates itself between the section of the cornea, and thereby prevents the healing of that tunic by the first intention. This accident is mentioned by Mr. Ware, and I have repeatedly seen the inversion, produced by inflammation excited subsequent to the operation, where there was not the least apparent previous disposition to this morbid state. This source,

* See an Inquiry into the Causes of Failure in Extracting the Cataract, page 312.

of irritation preventing union by the first intention, will sometimes, produce the same effects, as have been described to result, from the fragments interposing between the lips of the section of the cornea; but should these violent consequences not ensue, they will cause considerable opacity of the cornea, as it always occurs, in a greater or less degree, when the section, is prevented from healing, by the first intention. This opacity of the cornea, will impair vision, more or less, as it extends before the pupil; but under any circumstances, if it does not prevent distinct vision, when objects are held opposite to that part of the pupil which is not clouded, it will considerably narrow its extent.

By making the opening on the outside of the cornea, the ill effects of the interposition of the edge of the lid between the section, is much less likely to happen, than by the other mode, as only a small portion of the opening, and that quite at its lower part, is in the way of the lid, should it be inverted; whereas, when the inferior part of the cornea is cut open, from the wound being parallel with the edge of the lid, it is evident, that a much larger part of it is subjected to the

morbid friction, which is in consequence excited*. Supposing, however, from this, or any other cause, that the section of the cornea be prevented from healing by the first intention, and an opacity of the cornea results, its consequences will be found much less inconvenient to the patient, when situated on the outer side of the cornea, than at its inferior part. In the former case, it would only impede those rays of light, which pass through the outer part of the cornea, and thereby prevent the patient's seeing objects which are situated on the outer side; whereas, when the opacity, if at all considerable, occupies the lower part of the cornea, the patient is thereby prevented seeing objects immediately before him, particularly if situated downwards.

Baron De Wenzel, speaks of having very often seen a protrusion of the inner membrane of the cornea after the operation of extraction, which

* De Wenzel says, "One of the greatest advantages arising "from making the incision through the cornea vertically, is, that "the wound will afterwards be nearly covered by the upper eye-"lid; and its lips being thus kept in close contact, their reunion "will be promoted, the cicatrix be made less apparent, and the "danger of a staphyloma after the operation be diminished."— See De Wenzel on Cataract, page 113, 114.

he calls an "hernia of the membrane of the aqueous humour." Like protrusions of the iris, this membrane may become strangulated between the lips of the wound, and occasion a great degree of pain and inflammation. He mentions a case of this kind, when a cataract being forced through a small incision of the cornea, which incision was finished in a line parallel with the lower edge of the pupil, an hernia of the membrane of the aqueous humour resulted, which caused very great pain and the patient's "enjoying but little rest night or "day, for the seven or eight months that had "elapsed since the operation."

As the cause of this accident appears wholly to originate, in forcing a large lens through a small section of the cornea, it must obviously be highly culpable, on the part of the operator, if such an accident ever occurs in the mode I have recommended, from the facility of enlarging the opening of the cornea, if it be found on trial too small, for the free passage of the lens. It certainly never has happened in my practice, and I have no hesitation in asserting my belief, that it never will, as the cataract would be likely even to separate in pieces, (which it has sometimes done,

when the opening has not admitted of the free passage of the lens, when extracted with the hook,) rather than to occasion the forcing out of the membrane of the vitreous humour.

I shall lastly mention amaurosis, as a cause of failure in extracting the cataract in the usual manner. I am unable to explain, with certainty, the causes of this morbid state of the retina, although I have frequently seen cases, where it has resulted from the operation of extraction. It appears to me, that it probably arises, either from the sudden escape of a large portion of the vitreous humour, producing a correspondent collapse of the retina, whereby that exceedingly delicate membrane becomes extensively ruptured; or from the pupil being too small to admit the free extraction of the lens, and the consequent injury which the eye sustains from the degree of pressure made on the ball, in order to extract it. This hypothesis seems to be strengthened by the fact, that, in the majority of instances where I have seen the effect in question, it has been complicated with an obliteration of the pupil, and the formation of secondary cataract, apparently occasioned by a large protrusion of the iris; in

one amongst other cases, where the cataract could not be extracted, the vitreous humour being disorganized, the lens spontaneously sunk to the bottom of the eye; and, in a second case, the patient informed me, the pupil was so small, it had been found impossible to extract the cataract, although the operator, an experienced oculist, was nearly an hour in endeavouring to accomplish this object. How far these facts may account for amaurosis being frequently produced by the operation of extraction, as usually performed, I cannot decide, but I have certainly never seen one instance in which it has occurred, when my operation has been performed in the manner described in this work.

CHAPTER IV.

Sect. 1.

Analysis of the Author's new Operations.

THE analysis of the operations of depression and extraction, as usually performed, being now concluded; and having candidly, and without exaggeration, pointed out the dangers to which both are liable, I shall next, in conformity with the plan laid down, with equal candour and minuteness, analyze my own operations, and shew the dangers to which they may be subject, as well as the modes, by which these dangers, should they occur, may be obviated, or remedied. By these means the whole system is laid open to the investigation of my professional readers, who will thus be enabled to form a just estimate of the comparative value of the old and new operations, and to decide which are the most likely to effect the restoration of sight, the loss of which is one of the greatest deprivations inflicted upon human nature.

I shall commence with the description and consideration of the operation for " solid cataract in

"children and in adults." It is an operation, perhaps, more extensively applicable, and which has proved more generally successful, than any other, either ancient or modern.

Having secured the eye by making a gentle pressure with the concave speculum, introduced under the upper eye-lid, I pass the two-edged needle through the sclerotic coat, about a line behind the iris, with the flat surface parallel to that membrane; it is then carried cautiously through the posterior chamber, without in the slightest degree interfering with the cataract or its capsule. When the point has reached the temporal margin of the pupil, I direct it into the anterior chamber, and carry it on as far as the nasal margin of the pupil, in a line with the transverse diameter of the crystalline lens. I then turn the edge backwards, and with one stroke of the instrument, cut in halves both the capsule and cataract. By repeated cuts in different directions, the opaque lens and its capsule, are divided in many pieces, and at the same time I take particular care, to detach as much of the capsule as possible from its ciliary connexion. As soon as this is accomplished, I turn the instrument in the same direction as when it entered the eye, and, with

its flat surface, bring forward into the anterior chamber, as many of the fragments as I am able: by these means, the upper part of the pupil is frequently left perfectly free from opacity. By cutting in pieces the capsule and lens at the same time, not only is capsular cataract generally prevented, but the capsule is also much more easily divided into minute portions, than when its contents have been previously removed*.

The needle which I employ in this operation, is eight-tenths of an inch long, the thirtieth part of an inch broad, and has a slight degree of convexity through its whole blade, in order to give it sufficient strength, to penetrate the coats of the eye, without bending. It is spear-pointed, with both edges made as sharp as possible, to the extent of four-tenths of an inch. Above the cutting part, it gradually thickens, so as to prevent the escape of the vitreous humour.

This instrument, it is apparent, is well calculated to cut in pieces with facility, any cataract whose nucleus is not too solid to admit of division, and from the peculiar manner in which it is employed, (by making the vitreous humour and the attachment of the capsule to

* See my Work on Diseases of the Eye, p. 135.

the ciliary proceses, a counter-resistance to the cataract, while acted upon with its edge turned backwards,) is capable of dividing the nuclei of lenses of a greater degree of solidity, than could be effected by any other instrument hitherto used for the same purpose. Most of these instruments are sharpened, a short way only from their point, and any attempt to divide with them a lens of any considerable degree of solidity, would, instead of accomplishing the division, detach the lens from the ciliary processes, when, according to the usual practice, no alternative remains but either to depress the lens in the vitreous humour, or to place it in the anterior chamber for solution and absorption, whole and undivided, which latter practice can never be done with safety, when its nucleus does not admit of division.

The first step of this operation consists in carrying the needle through the coats of the eye, which, from its spear point and sharp edges, can be effected with a very slight degree of force, as it penetrates the dense sclerotic with as much facility as a lancet, while, from its very small size, it inflicts as little injury upon the organ as it is possible for any instrument to do. There

is reason to believe, that the degree of force which is necessary to be used, in effecting this step with a needle whose blade is round, instead of being flat, is one source of the inflammation which immediately succeeds to the operation, while the wound inflicted upon the coats of the eye, partaking more of a contused than an incised wound, is not only another source of irritation and inflammation, but also prevents its healing kindly, which evidently cannot be the case when my sharp-edged needle is employed. It has, however, been stated, that the eye sustains less injury from the use of a blunt than of a sharp-cutting instrument, but this opinion I conceive to be entirely erroneous; where any part is to be divided, it can obviously be done with less injury and violence, the sharper the instrument employed, provided it is used with skill and judgment. If this argument applies to operations in general, how much more forcibly may it be urged, in regard to those on the eye; when any considerable degree of force is there employed, either from the nature of the operation itself, or from the instrument with which it is executed, a degree of inflammation is produced, which too often baffles the utmost skill of the ope-

rator. On this account, it is observable, that the most experienced oculists are the most particular in their instructions relative to the form and condition of their instruments, all agreeing, that the favourable termination of the section of the cornea, greatly depends upon the good condition of the knife; and surely, if it is the principle of an operation to divide the cataract, that object can be more expeditiously accomplished, and with less violence to the eye, with a sharp-cutting needle, than with a blunt one, in which latter case, the cataract is torn, rather than cut; so many movements of the needle are also required, as not only to prolong the sufferings of the patient, but the continued action of the instrument upon that part of the coats of the eye in which it is inserted, necessarily excites inflammation, and hazards the total failure of the operation.

From the facility with which my needle penetrates the coats of the eye, the operator (particularly if he has been in the habit of employing needles with round blades) should be careful not to use much pressure, and should make the puncture at a sufficient distance behind the iris,

and parallel with its plane surface, otherwise the point may either pass through that membrane before it reaches the edge of the pupil, or be carried too far into the eye towards the nose. In either case, however, no serious mischief is to be apprehended, and these accidents can only occur to a very inexperienced and unsteady operator, who would probably do much more mischief to the eye, by any other mode of operating; the eye being rendered immoveable by the speculum, and the pupil previously dilated by the belladonna, the iris is the only part at all likely to be injured in this step of the operation, unless indeed the instrument be broken in penetrating the coats of the eye, an accident which, when the operation is performed, agreeably to the description of it given at length in my work on Diseases of the Eye, can only happen from unskilfulness.

The second step of the operation consists in dividing both capsule and lens, with the same stroke of the knife. This may be always accomplished, when the vitreous humour is in a healthy state, in young, and frequently in old persons, by turning the edge of the knife backwards, in the manner directed, provided the usual degree of firmness, in the attachment of the capsule to

the ciliary processes, exists. In those cases, however, where the nucleus of the lens is too solid to admit of division, if an attempt is made immediately to divide the lens, it will be entirely separated from its natural adhesions, when, should the vitreous humour be partly or wholly disorganized, the cataract will immediately become spontaneously depressed, when it cannot be extracted, without hazarding a very dangerous escape of the vitreous fluid. This is the only accident to which the second step of the operation is liable, when properly conducted; as, if the iris be wounded with the point of the needle, it must, as in the first, at all times be the fault of the operator. Should he not have had sufficient experience to enable him to ascertain with precision, the nature of the cataract by previous examination, he may certainly fall into the error, of attempting to divide a lens, which is too solid to admit of such division, when, should the vitreous humour prove to be in a disorganized state, he necessarily subjects the patient, to the dangers already detailed, from the depression of a solid lens, in a fluid vitreous humour. As this knowledge can only be acquired by practice, and observation, the young operator, in all doubtful cases, should proceed

with caution; and, instead of attempting to cut the capsule, and cataract in halves, with one stroke of the instrument, it will be prudent in him, to act at the first only with its point; by this means, he will be enabled, to ascertain the consistence of the opake lens, which will direct him how to proceed, in the prosecution of this, the most important step of the operation.

Having effected the division of the nucleus of the cataract, the operator is then to remove the divided portions with the point of the needle, through the aperture of the pupil, into the anterior chamber, which constitutes the third, and last step of the operation.

When the consistence of the cataract is tolerably firm, there is no difficulty in placing a part, or even the whole of the divided lens in the anterior chamber, should it be adviseable so to do, such is the dilated state of the pupil; no impediment is presented to the accomplishing that object; but when, as sometimes happens, the lens is very soft, and of a jelly-like consistence, the flat part of the needle, passes through it, with as much facility, as if it were turned edgeways, in which case, after freely dividing the capsule, as well as the lens, it will be better,

to avoid irritating the coats of the eye considerably, by repeated attempts to pass the portions of cataract through the pupil, which might probably produce inflammation, but rather to let it remain in situ, (taking care, however, to prevent its pressing too much against the posterior part of the iris,) where it will in a few weeks become lessened in quantity, and acquire a consistence which admits of its being removed with great readiness into the anterior chamber, if it be necessary to repeat the operation. In this stage, also, the iris may be wounded with the point of the needle, from a want of dexterity in the operator, but otherwise that accident will never happen, as, from the dilated state of the pupil, its circular margin is sufficiently out of the way of the needle, when the operation is skilfully performed.

If the capsule be partially, and not completely cut in pieces, during the division of the lens, after placing the fragments of that body in the anterior chamber, the capsule should be lacerated to the full extent of the area of the pupil. In doing this, the iris is alone the part subjected to injury; whatever injury the ciliary processes, or vitreous humour, have sustained during the posterior ope-

ration, (as the introduction of the needle behind the iris has been called,) being of no moment whatever, the uses of the ciliary processes having ceased, as soon as the crystalline lens is removed; and it is evident, from the very little irritation generally excited in the eye by the operation for capsular cataract, that no inflammation is to be apprehended from the laceration of these processes by the needle; experience in the operation for couching, (but especially the circumstance of the patient's vision not being perceptibly impaired, when the vitreous humour is in part or wholly disorganized,) renders it equally certain, that no injury is occasioned by the needle having lacerated the vitreous tunic*.

The next operation to be considered is that for "*capsular*, and *adherent capsular* cataract." The needle used in this operation, although slightly curved, is much less bent at its point, than that recommended by Professor Scarpa, on which account the surgeon can direct the point of it with greater ease and precision, for the purpose of separating minute portions of capsule, when

* Mr. Hey expresses his opinion strongly to the same effect, in his work on Surgery, page 78.

adherent to the iris. In this operation the capsule should be lacerated very freely, as much as its consistence will possibly admit of; but when that membrane is too thickened to enable the operator to accomplish this object, he must then detach it, from its ciliary connexion, except at one small part, as I have already described, and afterwards place it out of the axis of vision. In effecting these steps, there is less likelihood of wounding the iris even than in the operation for children and young persons, from the point of the needle, which is introduced at the same distance behind the iris, being somewhat curved, and directed towards the bottom of the eye, the pupil being dilated by the belladonna.

When the capsule adheres to the iris, constituting "*adherent capsular* cataract," the operator must proceed more cautiously, otherwise, in liberating the adhesions between the cataract and the iris, the latter membrane may be injured, and thereby give rise to severe inflammation; or, should the adhesions be very firm and extensive, a forcible attempt at separation would be likely to detach the iris from the ciliary ligament, and consequently occasion an obliteration of the natural pupil. In this, as in the operation

for capsular cataract without adhesions, care must be taken not entirely to detach the capsule from the ciliary processes, as it would float about in the vitreous humour, and probably obstruct the pupil; but, on the other hand, if not sufficiently detached, it will be likely, particularly if much thickened, to rise again into its former situation. Should these accidents occur, the evils resulting from them may be avoided; the floating portions may be extracted through a small puncture in the cornea, and, if the capsule should rise, the operator may again introduce the needle through the same puncture in the eye, and detach it still further; or, if the return should not take place for some time after the operation, it may be again repeated, and the further detachment effected, as may be necessary.

In "*adherent lenticular cataract,*" when the pupil is not too much contracted, provided the nucleus of the lens is sufficiently soft to admit of division, I employ the same two-edged needle as in operating for the solid cataract in young persons. Part of the fragments should then be carried through the pupil with the point of the

needle into the anterior chamber for solution and absorption. In this case, great caution is necessary on the part of the operator, both from the small size of the pupil, and from the extensive adhesion of the capsule of the lens to the iris, affording, a much smaller area for the action of the needle, and thereby rendering the iris more liable to be cut or punctured with the point of the instrument, while dividing the lens; in effecting this division, unless the surgeon proceed with similar caution, the iris is put so much upon the stretch as either to hazard its partial detachment from the ciliary ligament, or to produce a considerable degree of inflammation. By proper care and delicacy in the use of the needle, these dangers may, however, be wholly avoided, and are to be apprehended only, when an injudicious degree of force is employed with the instrument. If the pupil be too much contracted for the purposes of vision, the surgeon, instead of using the two-edged needle to cut up the cataract, should, at the first, proceed to the division of the iris, in order to form an artificial pupil, in a manner which will presently, be minutely described.

When the lens is hard and solid, and the pupil

sufficiently large to admit of its free passage, I at once carry the lens forwards into the anterior chamber, with the two-edged needle, ready for extraction, but more commonly the pupil requires enlargement before this can be effected. The iris scalpel, should in this case be employed at first, with which the iris should be divided transversely full two-thirds of its extent, and the lens afterwards carried through this new opening, into the anterior chamber with the point of the same instrument. Should the lens be soft, and even transparent, both lens and capsule ought to be cut through and divided, the capsule being always opaque, which would intercept the rays of light, equally as if the lens were in the same state.

In introducing the iris scalpel at the usual distance behind the iris, its edge should at the first be turned backwards, instead of upwards or downwards; by that means, the stretching of the aperture in the coats of the eye, which ensues from subsequently turning its edge backwards, (as is recommended in the operation for solid cataract in young persons,) and also the escape of a portion of the vitreous humour, when partially or wholly disorganized, will be prevented. It is of great importance that this escape should

not take place in this particular species of case, for the coats of the eye being thereby rendered flaccid, a sufficient resistance to the action of the knife is not afforded in dividing the iris; whereas, if the operator endeavours to accomplish his object by increasing the degree of pressure upon the instrument, he will detach that membrane from its ciliary ligament, instead of dividing it. It is necessary not only to divide the iris, but either to detach, or divide the capsule of the lens, to the full extent of the opening of the iris, otherwise its radiated fibres cannot retract the edges of the divided membrane sufficiently distant from each other, to prevent their reunion by the first intention, unless indeed some portions of the fragments of the divided lens are interposed between them.

For the purpose of dividing the iris, I introduce the point of the instrument, through the coats of the eye, about a line behind that membrane. The point is next brought forward through the iris, somewhat more than a line from its temporal ciliary attachment, and cautiously carried through the anterior chamber, until it nearly reaches the inner edge of that membrane, when it should be drawn nearly out

of the eye, making gentle pressure with the curved part of the cutting edge of the instrument, against the iris in a line with its transverse diameter. If, in the first attempt, the division of the fibres of the iris is not sufficiently extensive, the point of the knife is to be again carried forward, and similarly withdrawn, until the incision is of a proper length. I take care, however, very freely at the same time to cut the cataract in pieces. Some of these pieces I bring into the anterior chamber, and leave the remaining portions in the newly-formed opening of the iris. These act as a plug in preventing its reunion by the first intention, and assist the radiated fibres, in keeping the pupil more extensively open; by the time these fragments are dissolved, the iris has lost all disposition, or indeed power, of again contracting, its divided edges having by that time become callous, and being drawn considerably apart by the permanent contraction of the radiated fibres*.

* In a translation of the description of the operations contained in my work on Diseases of the Eye, by Professor Maunoir, of Geneva, whose politeness, in sending me some valuable papers, which he has published on diseases of the eye, I am happy in

In the critique written by Professor Scarpa upon my new operations, (which has been already noticed in a note, in the chapter on depression, page 70), that eminent surgeon says, when speaking of the formation of an artificial pupil, "With respect to the method of Mr. Adams, "which is nearly the same as that of Cheselden, "it remains to be examined, whether the objec- "tions made to Cheselden's operation, by men of "superior merit, were founded, or not, on facts "and reasoning," He then proceeds to ask the following questions: "Can it then be possible "that so many skilful operators since Cheselden's "time should have performed the operation, for "artificial pupil, with one single transverse "section of the iris, and always with an unsuc-

this opportunity of acknowledging, he complains of my not having noticed his description of the muscular structure of the iris, given in a very interesting paper, written by him, and translated into English by Mr. Young. Having, previously to the publication of Professor Maunoir's memoir, heard Mr. Cline and Doctor Haighton, describe this structure in their lectures, and having seen a beautiful preparation of them exhibited in the eye of a greyhound, at the Physiological Lectures of the latter gentleman, I necesssarily did not consider Professor Maunoir as the original demonstrator of this peculiar structure, and therefore did not mention him as such; the accuracy of which opinion has been since confirmed by Mr. Cline, who informed me he has taught the existence of the two orders of muscular fibres of the iris for the last thirty years.

" cessful issue, excepting Mr. Adams? Can his " remarkable success, be in consequence of his " having performed the operation on subjects in " whom the transverse section has penetrated " through a natural pupil, contracted by the ad- " hesion of a portion of the capsule, but not en- " tirely obliterated, while the operators who pre- " ceded him have cut the iris transversely, either " above or below the natural pupil? This is what " appears to me worthy of inquiry, reckoning for " nothing what Mr. Adams places great confidence " in, the interposition of a fragment of the cry- " stalline between the edges of the transverse " incision of the iris, as a means of preventing " the return of the disease. Since, however " slow may be the absorption and disappear- " ance of this kind of wedge, made with a frag- " ment of the crystalline, in proportion as its dis- " solution takes place, the pupil will reunite in " the same manner as in other wounds when they " begin to heal, in proportion as the foreign " body, which separates their edges, is dispersed " and removed by degrees*."

* Rélativement à la méthode de Mr. Adams, qui, à peu de chose près, est la même que celle de Cheselden ; il restera à examiner si les objections faites à cette dernière par des hommes d'un mérite supérieur, étoient fondées ou non sur les faits et sur

Before replying to those queries of the learned Professor, it is of essential importance to point out, that " my method is not nearly the same as that of Cheselden ;" for although we both have the same object in view, namely, that of dividing the iris transversely, yet, I accomplish this step in a manner very materially different from the mode described by that eminent surgeon. He employed a spear-pointed, single-edged knife, which he passed through the sclerotica as in couching ; he

les raisonnements ? Seroit-il donc possible que tant d'habiles opérateurs depuis Cheselden, eussent pratiqué l'operation de la pupille artificielle avec une seule section transversale de l'iris, et toujours avec une issue malheureuse, à l'exception de Mr. Adams ? Ses heureux sucès seroient-il dûs, à ce que chez les sujets opérés par Mr. Adams, la section transversale à traversé une pupille naturelle, rétrécie par l'adhérence d'une portion de la capsule, mais non entièrement oblitérée, tandis que les opérateurs qui l'ont précédés, ont incisé transversalement l'iris ou au-dessus ou au-dessous de la pupille naturelle ? C'est ce qui me paroît digne de recherche ; comptant d'ailleurs pour rien, ce en quoi Mr. Adams place une grande confiance, l'interposition d'un fragment du crystallin entre les bords de l'incision transversale de l'iris, comme moyen de prévenir le retour de la maladie. Puisque quelque tardive que puisse être l'absorption et la disparition de cette espèce de coin, fait avec un fragment du cristallin, à mésure que sa dissolution se fera, la pupille se resserrera, de la même manière que cela arrive dans toutes les autres plaies qui tendent a se cicatriser, à mesure que le corps étranger qui sépare leurs bords s'en écarte et s'en éloigne petit-à-petit.—See a letter from Professor Scarpa to Professor Maunoir, at Geneva, dated Pavia, ce 2 Août, 1814.

afterwards thrust it forwards through the iris into the anterior chamber, carrying it near to the nasal margin of the iris, then turned the edge backwards, and, in withdrawing it entirely out of the eye, divided as much of the iris as he was able.

I, on the contrary, employ a small curved-edged iris scalpel, the cutting part of which is similar in form to that of a dissecting scalpel, and evidently much better adapted to divide the iris with facility, than the spear-pointed knife of Cheselden; until my present instrument was constructed, I repeatedly failed with the other, to accomplish the object intended.

In order to prevent the escape of the aqueous and vitreous humour, more especially in the very fluid state of the latter, I carry the instrument with the edge turned backwards through the sclerotica and iris; as, when the aperture through these coats is made by turning the instrument in the way described by Cheselden, (in a different position to that in which it is entered), it is thereby so much stretched open, that the vitreous humour escapes in great abundance, rendering the coats of the eye so flaccid, that it is almost impossible afterwards to divide the iris, there

being then no sufficient counter-resistance afforded to the action of the instrument to accomplish this object. Instead also of withdrawing the instrument out of the eye at once, as recommended by him, I repeatedly carry it forwards, and then withdraw it in the same line with the iris, making as gentle pressure as if I were dividing fibre after fibre, until the opening is full two-thirds the extent of the diameter of that membrane; by this means there is no hazard of its reclosure, and little fear of the iris becoming detached from the ciliary ligament, which were, I conceive, the two principal sources of failure, when the process recommended by Cheselden was pursued.

It appears to me, therefore, very possible, that many surgeons of superior skill have failed, in effecting a permanent opening of the iris in the manner described by Cheselden, and the "objections to his operations were certainly founded on facts and reasoning;" for, in the effort to accomplish the division of the iris, during the act of withdrawing the instrument out of the eye, if a slight degree of pressure were made upon it, the opening effected in the iris must necessarily be so small, that it shortly afterwards

would close again by the first intention; while, if that objection were attempted to be obviated by increasing the degree of pressure, the iris would most probably become detached from the ciliary ligament, after which, every further attempt to divide it must prove abortive, as its separation would become, in consequence, but the more extensive.

When obliteration of the pupil is complicated with a thickened capsule, or a solid lenticular cataract, or with both, it is almost impossible that Cheselden's operation could ever succeed*, and this accident was another cause of the universal disrepute, into which the operation for artificial pupil had fallen throughout Europe, in the estimation of the profession for many years, until I conceived the possibility of improving it, so as to

* It was tried and condemned by Sharp, Warner, Ware, Wathen, and others in England; by Richter in Germany; Wenzel and Janin in France; and, from the opinion of the latter, was held up as an operation of no utility by Professor Scarpa in Italy. Indeed, some French writer even disputed the veracity of Mr. Cheselden; and Professor Asselini, in reply to this unjustifiable suspicion, in a very ingenious work on artificial pupil, took some credit to himself, for deeming it possible that Cheselden did succeed by the method of performing the operation which he described.

render it an useful operation: for unless the capsule and lens are either divided two-thirds the extent of their diameter, or are altogether detached from the iris, the division of the latter membrane, according to Cheselden's plan, is of no avail, as its radiated fibres otherwise cannot contract so as to enlarge the opening; consequently the edges of the wound, being kept in close contact, will reunite by the first intention.

To prevent the possibility of this reunion, it is my invariable practice, when enabled to divide the crystalline, to place some of the fragments between the lips of the wound as a plug or wedge, usually taking from four to six weeks for solution and absorption; at the expiration of which period, not only have the lips of the wound in the iris healed, but, from the contraction of the radiated fibres, are drawn so far apart from each other, (sometimes nearly one-sixth of an inch,) that it is impossible they can reunite. In cases, however, where the lens has been previously removed, I have found, from considerable experience, that the mere division of the iris and capsule, if made of proper extent, are sufficient to ensure contraction of the radiated fibres of the

iris, and the consequent formation of a well-sized artificial pupil. To accomplish this requisite division, even of the iris and capsule, it is always necessary to make repeated and gentle efforts, (as already described,) with the iris scalpel, which being so much better adapted to cut keenly, than the knife employed by Cheselden, a single effort with the latter must have been wholly inadequate to effect the desired object.

Having, I trust, satisfactorily accounted for the failures in Cheselden's operation, and the success which has attended its revival and improvement by myself, I can assure Professor Scarpa, that the effect has been the same, whether the division was made above or below the natural pupil, or in the transverse diameter of the iris; for, in whatever part the iris is divided, if its division, as well as that of the capsule and lens, (the former of which is always adherent,) be of a sufficient extent, the circular order of fibres being thus cut through, and the radiated order from this cause ceasing to have any antagonists, they will become permanently contracted, and thereby form an artificial pupil, of a sufficient size for all the purposes of vision.

The opinions expressed by the Professor, that, " however slow may be the absorption and dis- " appearance of the kind of wedge made with the " fragment of the crystalline lens, the pupil will " still reunite;" and his analogy " that this will " happen in the same manner as in other wounds " when they begin to heal, in proportion as the " former body, which separates their edges, is " dispersed and removed by degrees," are neither, I conceive, borne out by pathological reasoning, nor confirmed by facts; for it may be asked, what power does the iris possess, of again contracting, after the circular order of fibres, in which this power of contraction resides, is completely divided? while, from the inherent contractile power of the radiated fibres, increased by the destruction of the circular, it is evident, that the Professor's analogy of a wound becoming closed, after the removal of the extraneous body upon which the wound depended, does not at all apply to the present subject.

My success then, in the performance of the operation, has resulted from a strict attention to the rules here laid down, and differs as much from that of those surgeons who have so

strongly condemned Cheselden's operation, as the mode which I pursue in performing it. In thirteen pensioners of Greenwich Hospital operated upon for artificial pupil, there was not a single failure; the success being complete in all, with the exception of one man, who died of consumption, and in whom I was consequently prevented from enlarging the division of the iris to the requisite size, by a second operation. These artificial pupils have continued open, although several of them were made three years ago, and none less than two; in all, the new pupil is considerably larger at present, than it was immediately after the operation; in some, its vertical extent has nearly doubled, the radiated fibres having gradually contracted, in proportion to the length of time the division of the circular, has been made; its transverse extent necessarily remains the same, being limited to the size of the original division of the iris. In a large number of private patients, also, who have been operated upon for artificial pupil, within the last seven years, since I began to practise the operation, the result has been similarly successful.

Professor Asselini, (whom I have mentioned in

a note, as having published his opinion respecting the possible success of Cheselden's operation,) when in England two years ago, appeared much gratified to find his opinion on this subject confirmed, on seeing some of these cases, at Greenwich Hospital, and witnessing the operation itself, performed on a patient with a closed pupil and a wasted lens, whom he afterwards saw at the end of seven days, perfectly restored to sight, with scarcely a vestige even of redness remaining in the eye.

A considerable degree of delicacy and dexterity of hand is, however, absolutely necessary for the successful execution of this operation; for, unless the iris is divided, as I have already said, as it were fibre after fibre, it will become partially detached from the ciliary ligament; in most instances, the union of them being very slight, and very easily separated. I have found this accident occasionally occur from the merest touch of the knife. If, during the performance of the operation, the vitreous humour escapes in any quantity, (which, when fluid, it will sometimes do, notwithstanding the precaution of entering the knife in the manner recommended,) it were better for the

surgeon to desist, and wait some days until the puncture has healed; long before which period the natural distention of the eye, will have been restored by the regeneration of the lost fluid; for, if he persist when the coats of the eye are at all flaccid, he will not succeed, in dividing the iris, by using a moderate pressure with the edge of the iris scalpel; and, if he should attempt to increase the pressure, he will partially detach that membrane from the ciliary ligament, and preclude the possibility of afterwards dividing it. Indeed, when this detachment has in any degree taken place, it is best at once to enlarge the opening, sufficiently to make an artificial pupil of a proper size, in the manner recommended by Professor Scarpa.

There is usually no difficulty in placing a hard lens, with the point of the iris scalpel, through the artificial opening in the iris, into the anterior chamber, for extraction, provided the division is of the extent I have described; the only danger, in this case, is, when the vitreous humour is morbidly fluid, the capsule and lens may be wholly detached during the division of the iris, and then become spontaneously depressed to the bot-

tom of the eye. This state of things may be prevented, by making the incision in the iris, above the transverse diameter of that membrane, taking care at the same time not to detach the cataract, which will then remain suspended by the lower part of the attachment of the capsule to the ciliary processes. In two instances of this kind, where the cataract remained suspended below the edge of the pupil, I did not judge it necessary to extract it, but suffered it to remain; both patients recovered as perfect vision as is ever experienced after the removal of the lens.

The last of my operations to be examined is that of *extraction*. Having already described it in this work, I shall not again detail the different steps that are pursued, or the instruments with which it is performed, but shall enter at once into its analysis. The first step, it will be recollected, is to introduce the two-edged needle behind the iris, in the manner recommended for soft cataract, and, having ascertained that the lens is too solid to admit of division, the point of the instrument is to be carried above, in order to detach the connexion between the ciliary processes and capsule,

after which the opaque lens, may be readily passed through the dilated pupil into the anterior chamber. If, however, there be observed an escape of the vitreous humour by the side of the needle, it may be concluded, that it is either partially or wholly disorganized; in which case, the surgeon should at once bring the cataract into the anterior chamber, by pressing upon it below its transverse diameter, when the upper edge will tilt forwards through the pupil, and can be easily brought into the anterior chamber; whereas, if it be at first entirely separated from its ciliary attachment, it becomes spontaneously depressed, and cannot afterwards be extracted without hazarding the total destruction of the eye. It has been already stated, in the short history given of this operation, that, on my first adopting it, I effected the section of the cornea (after having brought the cataract into the anterior chamber with the needle) by carrying the knife across it in the usual manner. The consequence, however, of so doing, was, from the knife being carried so near to the iris, in order to make the section of a sufficient size, to force back the cataract through the pupil into the vitreous humour, which, being in a disorganized state, in two instances in which I performed

this step of the operation, the cataract immediately and spontaneously sunk to the bottom of the eye, and produced gutta serena in one, and in the other suppuration, and a total destruction of the organ*. In a third instance, the cataract became hid behind the iris, and the coats of the eye collapsed from the abundant escape of the fluid vitreous humuor; but I was fortunately enabled afterwards to extract it with a hook.

These accidents induced me to adopt my present mode of opening the cornea, which, it will be recollected, consists in cutting behind the cataract, that is, between the cataract and the iris, whereby, instead of the lens being forced back through the pupil, as in the former method, it is actually prevented from taking such a course, during the accomplishment of this step of the

* The same accident happened to Doctor Clarke, an exceedingly ingenious surgeon, now residing at Verdun, in France, who told me that he had performed this operation according to the description given of it by Mr. Travers, when he was unable afterwards to extract the cataract which had been forced back through the pupil into the vitreous humour, during the section of the cornea, and which was succeeded by such violent inflammation, that the eye was entirely lost.

operation, by the point of the knife with which the enlargement of the opening is effected. In doing this with the blunt-pointed curved knife, after the puncture has been made with a lancet, or two-edged knife, there is no fear of wounding the iris, if proper caution is used; and the size of the cataract being seen, and its exact consistence ascertained, the surgeon will have no difficulty in making the enlargement of the requisite size, and can afterwards extract the cataract with facility by means of a hook. If, in doing this, the cataract should break in pieces, these pieces must be separately extracted with the scoop, or such other instrument as is well adapted to that purpose. It is not, however, necessary, to be very particular, in extracting all these portions, as the section of the cornea being made vertically, the lower part of that tunic is left whole, and some of these fragments may remain without doing injury, until they become dissolved and absorbed.

In extracting the cataract with a hook, care must be taken not to entangle it in any manner with the iris, as it would in that case detach that

membrane from the ciliary ligament, and, very probably, cause thereby a total failure of the operation. It is also necessary for the surgeon not to attempt the extraction of the cataract, while there is any protrusion of the iris, as it would carry the protrusion still further before it, and, in this manner, very probably, detach the inner part of the iris from the ciliary ligament. The protrusion should be returned by gentle frictions of the lid with the finger, or by the forked instrument already mentioned.

In this method of performing extraction, no degree of pressure is at all necessary, and should therefore be avoided both by the surgeon and his assistant; and if, at any time previously to the introduction of the hook for the extraction of the cataract, a protrusion of the iris, or vitreous humour, occur, from any involuntary spasm of the muscles of the eye, the lids should be instantly closed, and the operation concluded as soon as the spasm has subsided.

These are the observations which present themselves to me, as necessary for the surgeon to bear in mind, in performing this operation; and, if he

carefully attends to these precautions, I have every reason, from experience, to suppose, that he will seldom fail of success, and certainly will avoid many of the dangers, attendant on the usual method of performing extraction.

CHAPTER IV.

Sect. 2.

Summary, and General Observations.

THE analysis of the operations of depression and extraction, as performed in general, with the description and analysis of those adopted and practised by myself in their stead, are now before the public, and it is for the profession to decide, how far the extensive success which has attended the latter, will be considered sufficient to warrant a preference in their favour. In bringing forward this subject, I have faithfully given the opinions of the most able advocates for each operation, drawing such inferences, and making such comparisons, as experience has enabled me to do. This has led to a minute examination, of the different steps and precautions, essential to the performance of a good operation, insomuch that to men unacquainted with their importance, such observations may

appear prolix or superfluous. This imputation, however, will not be affixed to them by the experienced operator, who well knows how to appreciate these minutiæ. He will remember, the twenty-five mementos published by the late Mr. Ware, and which he states to have constantly read, the morning he was about to operate. The share of operative practice enjoyed by that gentleman, might one would imagine, have rendered such a step a work of supererogation; but he was so satisfied of its necessity as well as of its utility, that he never dispensed with it. I trust that I shall also be acquitted, of any desire to magnify the dangers attendant on the operations of depression and extraction; my opinions, in regard to the former, being borne out by facts, and, I conceive, sound argument, while those I have advanced against the latter, are fully confirmed by its warmest advocates.

The objections which have been made to these operations, are necessarily scattered under many different heads, and incorporated, with the consideration and description of my own modes of practice. I shall, in this chapter, therefore,

give a short and connected summary, of the leading facts and arguments contained in the foregoing part of this work, when treating of these different operations, in order to enable my readers to take a general view of the subject. For further illustration, I shall add some general observations, and give the opinions of different authors not hitherto quoted, although avowedly hostile both to depression and extraction, yet, whose experience and eminence, entitle them to considerable attention; and I shall conclude the whole, by exhibiting tables illustrative of the success, of the old and new operations.

It has already been shewn, that the knowledge of the solvent powers of the aqueous and vitreous humours, detailed in the works of the eminent authors who wrote in favour of depression, greatly contributed to rescue that operation from the disrepute into which it had fallen; and by the quotations which will be made in the second Section of this Chapter, it will be seen, that the ill success attendant upon the operation of extraction, further tended to the same effect. Mr. Hey says, " In the greater number of cases " which have fallen under my care, the cataracts

" have been found so soft, as to permit the needle " to pass through them in all directions. In this " state of the disease, I do nothing more than " break down the texture of the cataract, and " endeavour to puncture or tear off a portion of " the capsule, so that the aqueous humour may " flow upon the broken lens*." Mr. Pott's directions are precisely similar. Professor Scarpa appears to prefer depressing a lens whose solidity will admit of it, and justifies this practice in his work on Diseases of the Eye, by the assurance that it becomes dissolved and absorbed with equal certainty, in the vitreous as in the aqueous humour; although the Professor was the first, (as far as I am informed,) who remarked the greater rapidity, with which the cataract becomes absorbed in the latter humour, than in the former.

These observations, I think, clearly evince the propriety, of making a distinction between the term depression, and that which ought to

* In a very polite letter I have been recently favoured with by that candid and eminent surgeon, Mr. Hey, he says, " If I have at all contributed to rescue the operation of *couching* " from the disgrace into which it had fallen when I first wrote " upon the subject, I hope I have been of some little benefit to " the afflicted."

be denominated the absorbent practice; for the word depression is not only an inadequate definition of what is proposed, when reference is had to the solvent powers of the humours of the eye for the purposes of absorption, but has hitherto been used indiscriminately by those who had, and those who had not, such a view in their operations. After simple *depression* has been performed, the cataract has been found to exist, at the end of fourteen, or even seventeen years. In the *absorbent practice,* the dissolution, and not the mere displacement, is the chief object. Surely then, when the ends to be attained are so different, the same term ought not to be applied to both modes of practice.

This is not a mere cavil for verbal distinction. The very essence of the operation recommended, is derived from attention to this point. If the lens is to be divided, it is with the view of effecting its dissolution, and all considerations about depression, are to be made subservient to this intention.

It has been shewn, that as the cataract dissolves most speedily in the anterior chamber of the eye, its removal to this situation, so broken

or divided as to expose it to the full solvent powers of the aqueous humour, is the great desideratum. Surely, such an operation, with a view to such a process, is ill defined by the word depression.

The utility of a distinction in the term, is equally obvious in a practical point of view. The operation called couching, or depression, had originally for its object, the removal of the opaque body below the axis of vision, and this only. It was an operation of mere mechanical effect. It having been found, that the cataract had subsequently sometimes become dissolved and absorbed, it was then proposed, in order to favour absorption, to lacerate the capsule and cataract, so as to give a better chance to their speedy disappearance.

In the operation which I am anxious to recommend, I entirely lose sight of the idea of depression. My first, and chief design is to divide the cataract, and to place its fragments where they will be most readily dissolved and absorbed. It is neither my wish, nor do I attempt, in this practice, to contend for novelty or discovery. It will, nevertheless, I presume, be allowed,

that the systematic adoption of an operation, for the immediate division of the cataract, and its subsequent removal, into the anterior chamber, when its consistence will admit of doing so, thus effecting its ultimate solution and absorption, by one, or, at most, two operations, and, in the short space of five or six weeks, are deviations at least from ordinary practice.

In the analysis I gave of the operation of depression, I confined myself to three objections to its performance, disregarding many others, which have been alleged by the advocates of the rival operation of extraction. The *first* is, that the cataract, when depressed in the vitreous humour, (the solvent powers of that body not being sufficiently active to effect its speedy absorption,) will remain for a considerable length of time undissolved, and thereby subject the patient to many accidents and dangers, which are avoided when the cataract is placed in the anterior chamber, where its solution is effected with much more rapidity, and greater certainty; therefore, I contend, that the latter operation should always be performed in preference to the former, when it can be done with safety.

From the most extensive experience, I affirm, (and my success in the performance of the operation, in hundreds of instances, authorizes me to speak with confidence on the subject,) that a part, or the whole of an opaque lens, may with safety be placed in the anterior chamber of the eye for solution and absorption, whenever the nucleus is not too hard to admit of division. It matters not what may be the age of the patient, the only difference which it makes, being the time required for the final disappearance of the opaque body. The solidity of the lens is less, and the solvent powers of the aqueous humour are much greater in young, than in old persons; consequently, the cure will be effected in a shorter space of time in the one, than in the other.

Not only is the absorption of the lens more rapid, when carried through the pupil into the anterior chamber, than when it is depressed, or suffered to remain behind the iris, (as is shewn in some very remarkable cases, in my work on Diseases of the Eye*,) but the irritation and

* "In Mrs. C.'s (Case 39) the cataract was of that favourable "consistence which admitted of being at once very freely di- "vided, and with so little pain, that the operation was finished, "without her being sensible of its commencement; yet, as the

inflammation are much less than when the capsule is ruptured, its substance broken up, and suffered to remain for solution and absorption, in situ; in this case, from the uneven pressure of the fragments against the posterior part of the iris, violent pain and inflammation almost

" fragments were not placed in the anterior chamber, they ex-
" cited so much inflammation by their unequal pressure on the
" posterior part of the iris, that the destruction of the eye, or a
" closure of the pupil, were prevented, only by the most active
" antiphlogistic plan.

" Mrs. H., aged 40, (Case 42,) in whom the cataract was of
" an unusually large size, and so hard, that it could not be cut
" in pieces, but was merely divided in halves, and with the an-
" terior part of the capsule placed in the anterior chamber, where
" they became absorbed in little more than five weeks. During
" this period, it was necessary but once to apply a few leeches
" to the eye-lids.

" In the case of John Herbert, aged 40, the contrast was even
" more striking. I brought the whole of the divided lens of one
" eye into the anterior chamber, where it dissolved in five weeks,
" without an unpleasant symptom; whereas, in the other, where
" one-half of the lens was similarly brought into the anterior
" chamber, and the remainder left behind the iris, the first
" dissolved in six weeks, without any inflammation, while the
" other took fourteen weeks before it disappeared, during the
" latter part of which time, the patient experienced much pain
" and inflammation, requiring active antiphlogistic measures for
" their removal."

I have selected these few cases, as illustrative both of the effects of bringing the fragments of the lens into the anterior chamber, and suffering them to remain behind the iris. The general tenour of my experience is perfectly in unison with them.

invariably follow; whereas, from the speedy solution it undergoes in the anterior chamber, no unpleasant results are at any time to be apprehended. In addition to my own experience upon this point, I am supported by the opinions of Pott, Scarpa, and Hey, as well as of other surgeons of great eminence, all of whom concur in declaring, that no ill consequences, result from placing the fragments of a divided lens in the anterior chamber.

I am induced to call the particular attention of my readers to this fact, because a contrary opinion has been entertained, and has been employed, in favour of another operation, which frequently requires to be repeated ten or twelve times in the same eye, during more than as many months, when the consistence of the cataract and capsule, would in many instances, admit of immediate and complete division, and whose solution, by being placed in the anterior chamber, might be effected, in the course of a few weeks, by a single operation*.

* About three years ago, I successfully operated for capsular cataract, according to the method recommended in this work, on a girl, nine years of age, born blind, who had undergone the anterior operation of Conradi, performed in an Eye Infirmary, in this metropolis, seventeen times, during as many months,

Professor Scarpa recommends, in cases of capsular cataract, that the opaque membrane should be lacerated, and the fragments placed for solution in the anterior chamber of the eye. This laceration, I contend, in many instances

ten times in one eye, and seven in the other. The result of these operations was the removal either of a fluid cataract, or the unabsorbed parts of one, which had been originally fluid, and an aperture in each capsule was effected rather larger than a large pin's head, which necessarily was a great deal too small for the purposes of vision. No inflammation attended my operating on her, and, in seven days, even the puncture made by the instrument in the coats of the eye had healed.

A few weeks after this operation, I operated, in the presence of my friend Doctor Bain, upon a young gentleman of the same age as this girl, and who was also born blind. From the similarity in their ages, and from the capsule in both being much thickened, the parents of this young gentleman not only saw the girl before the operation, but attentively watched its progress, and, in consequence of its favourable termination, placed their son under my care. I performed the operation for fluid cataract, and succeeded in placing the opaque and thickened capsules below the axis of vision, after letting out the opaque fluid. Without any inflammation, the patient's eyes perfectly recovered from the operation in ten days, and he left town at the expiration of three weeks, with the pupil in each eye perfectly clear and moveable, and no vestige remaining that would lead to the belief, that any disease had ever existed, or that any operation had been performed. There can be no doubt, from the result of this case, that, had the same operation in the first instance been performed on the little girl's eyes, the result would have been equally successful.

cannot be effected, from the density of the capsule; and, when it is adherent to the iris, it will, in a considerable proportion of cases, be more readily separated from its attachment, than ruptured. If the surgeon confines himself to the use of the needle, he has then no other alternative left, but either to depress the capsule, or to place it undivided in the anterior chamber. In the first case, it will certainly rise again; and in the second it will remain a considerable time undissolved, occasioning inflammation, and obstruction to vision.

When the state of the capsule will admit of doing so, I lacerate it very freely to the full extent of the pupil, but, instead of placing the fragments in the anterior chamber, I suffer them to remain attached to the ciliary processes; on the contrary, one part only excepted, I separate a thickened capsule from its attachment to the ciliary processes, and afterwards depress it below, or on the outer side of the axis of vision. Thus, the case in which Professor Scarpa discountenances depression (for he recommends in all instances to lacerate the opaque capsule, and place the fragments in the anterior chamber,

stating that, if depressed, they will return into their situation) is the only one in which I conceive depression, when conducted in the manner just described, can be performed with the certainty of advantage; as no pressure is made upon the retina, the opaque capsule being only partially depressed, and it is prevented from floating in the vitreous humour, by the remaining attachment to the ciliary processes.

My *second* objection to depression, is the liability of the cataract to reascend into its natural situation, when forced into a healthy solid vitreous humour, the peculiar structure of which, it is contended, evinces an elastic power.

In the species of cataract termed (but improperly termed) *elastic*, from the immediate return to its situation, as soon as the needle is withdrawn from the eye, this firm and elastic state of the vitreous capsule, or tunica aranea, I suppose to exist in a peculiar degree; and I have entertained the hypothesis, that the cause of the instantaneous return of the cataract, is the process of the vitreous capsule lining the fossula not being ruptured, but driven into the body of the vitreous humour before the cataract. That the vitreous humour possesses

some propelling power, which forces up the cataract, is obvious, otherwise, from its specific gravity it would never return; the muscles of the eye do not possess power sufficient to compress the globe, so as to cause the effect in question, or, if they did, would the cataract, from its specific gravity, remain in its situation without adhesion.

The probability, that the elastic state of the vitreous humour acting upon the cataract, is the cause of its return, is further strengthened by the fact, that when the vitreous humour is disorganized, and in a fluid state, the opaque lens becomes spontaneously depressed, and, like a stone in water, sinks to the bottom of the eye. This effect takes place as soon as the lens is detached from the ciliary processes, and its reascension can never occur, unless momentarily, when favoured by the position of the head.

Notwithstanding the many instances recorded of the reascension of a depressed lens into its natural place, or of its passing into the anterior chamber, the tendency to which is noticed by most of the ancient writers, by Celsus, Rhasis, Avicenna, and others, as well as by those of a modern date, who have written upon the subject of depression,

the fact is, nevertheless, positively denied by Professor Scarpa, provided the operation of depression be performed according to the rules which he has laid down.

I have supposed that it may be asked, whether, in the instances recorded in this work, of the return of the cataract, the operation was performed in the manner recommended by Professor Scarpa? Probably not; but I contend, when the vitreous humour possesses the firmness and elasticity, which I conceive it does when in a state of health, that the return of the cataract is always to be apprehended, in whatever manner the operation may be performed.

In support of this assertion, I have adduced a case from Professor Scarpa's work on Diseases of the Eye, in which, a large portion of the lens, the size of a barley-corn, did reascend, requiring a second operation; and have also given an extract from a letter written to me by Mr. Este, a former pupil of his, by which it appears that it was no uncommon thing for a lens to reascend in the Professor's own practice, as he recollects seeing three instances of it occur during the period he studied under him at Pavia. Indeed, from the practice

which Mr. Este, in the same letter, mentions the Professor recommended, in his lectures to his pupils, namely, propelling the vitreous humour with the flat part of the needle into the situation previously occupied by the cataract, it would appear, that he was fully aware of its liability to return, even when depressed by himself, and consequently any peculiarity in his mode of performing the operation, would be no argument against my position.

Professor Scarpa also lays great stress, on the certainty of the solution of the cataract after it has been depressed, when the capsule is freely ruptured, which latter practice he strongly recommends. Without doubt, the opaque lens will become dissolved if the capsule be freely lacerated, and no reascension occur; but it is not possible at all times to rupture a healthy capsule, and very rarely one which is thickened and diseased. In the former case, the least touch of the needle will cause it to become separated, from its attachment to the ciliary processes, especially if the vitreous humour is disorganized; and, in the latter, it is sometimes impossible to divide the capsule, even when the counter-resistance to the

action of the instrument is increased by its adhesion to the iris, and the sharp-cutting iris scalpel is employed; while from the cases mentioned by De Gravers, it is evident, that, without this division, the lens, when depressed in the vitreous humour, will remain undissolved for any number of years.

My third objection to depression, is, when the vitreous humour is fluid, in which case, from the want of sufficient counter-resistance in that body to sustain the weight of the hard, and undivided lens, it will press upon the retina, and cause gutta serena; and even, as has been proved by dissection, will ulcerate that membrane. At other times, by rolling about, from the different motions of the head, it gives rise to violent inflammations of the eye, which terminate either in a closure of the pupil, or a total suppuration of the organ. In this fluid state of the vitreous humour, it is therefore always dangerous to depress a hard, and soiid lens, unless its nucleus be divided; for, even when wholly divested of its capsule, it will otherwise remain unabsorbed a sufficient time to occasion the above morbid effects. In proof of which, when an undivided lens is even placed in the an-

terior chamber, where absorption goes on so much more rapidly, than in the vitreous humour, it will sometimes remain so long unabsorbed, as to occasion by the pressure on the iris, and the internal surface of the cornea, the most violent inflammation of the one, and even ulceration of the other. The comparative density of structure of the cornea, cannot leave a doubt, but that the retina, under similar circumstances, must suffer from the pressure of the lens in a much shorter time, and to a much greater degree. This, I conceive, to be the cause of those acute, and long-continued pains, mentioned by the most respectable authors, as frequently resulting from the operation of depression, and which I have myself sometimes witnessed; as well as the loss of sight, which was immediately derived, from the depression of the cataract, either by gutta serena, or by the effects of the violent inflammation, caused by its pressure or friction on the retina.

The question arises, whether, under any circumstances, success may be expected from depression, when the vitreous humour is disorganized? Certainly not, excepting where the nucleus of the lens can be first divided; in which case, the

fragments immediately disappear, as soon as detached from their natural adhesions, leaving the pupil quite free from all obstruction. This may be regarded as one of the most satisfactory cases, which can occur in the practice of the oculist.

In treating of the practice of *extraction*, I have made two divisions in the different species of cataract, requiring the performance of an operation. In the first are enumerated a number of cases, in which the operation of extraction is admitted, by the most zealous and able writers in its favour, to be wholly inapplicable, and eminent authorities are quoted in support of this opinion. In the next I have investigated the dangers occasionally attendant on that operation, even in cases the most favourable for its performance, and have pointed out in what manner most of these dangers are to be avoided by the series of operations which I pursue.

The first description of case I have enumerated, to which extraction is very inapplicable, is in *young children*, and in persons *who are born with cataracts*. In children, reason is not sufficiently matured to teach them the necessity of keeping

the eye steady during the operation, a circumstance not only exceedingly embarrassing to the surgeon during its immediate performance, but which frequently renders it utterly impracticable, whilst, at other times, it occasions its ultimate failure, by producing a large protrusion of the iris, or of the vitreous humour, which may result from the very slightest compression on the ball, by the action of its muscles. In persons born with cataracts, the eye has a constant rolling motion, owing to the involuntary action of its muscles. This want of steadiness arises from its not having been exercised for the purposes of vision for the many years, which are frequently allowed to pass, before any operation for the removal of the cataract is attempted. The invariable consequence, under such circumstances, is to render the patient totally unable, either to direct his eye to any object, or to retain it in any one direction.

In consequence of these difficulties attendant on the operation of extraction, it was usual to advise, that it should be delayed, until the patient had attained the age of twelve or fourteen years: if attempted sooner, the total loss of the eye fre-

quently resulted. In the former case, not only the most important part of life, for the purposes of education is wholly lost, but also, in persons born blind, the habitual and involuntary rolling of the eyes becomes so confirmed, as well as the indolence of the patient in exercising them, that it too often happens from these and other causes, detailed in my work on Diseases of the Eye, that the eventual removal of the cataracts is not attended with that acquirement of vision, which the success of the operation itself, might have previously led the surgeon and his patient to expect. All which is prevented, when the operation is early performed.

Hence, the importance of removing the cataract in children at an early age, whether existing at birth, or coming on shortly afterwards. This great object was first attained by the late Mr. Saunders, and, acting upon what I witnessed in his practice, I have repeatedly operated on infants three months old.

It has been already stated, that there are different modes of conducting the operations for effecting the absorbent practice. The mode Mr. Saunders preferred, is different from that

I have described; in the latter, the cure is accomplished much more expeditiously, and usually requires but one, or at the most two operations; its success is also, I believe, much greater.

To those who are aware of the difficulty, or rather the impracticability, of performing extraction in these cases, it may perhaps excite some surprise, when they are informed that in nearly three hundred eyes of children, and persons born with cataracts, on which I have performed this operation, only two eyes have been lost by suppuration; in four others, the operation failed from closure of the pupil, or the return of the capsule into its natural situation, after having been depressed in the manner recommended for the cure of capsular cataract, in each of which, I am persuaded, I should have ultimately succeeded, had I been permitted to repeat the operation. Indeed, this class of cases, from the soft consistence of the cataract, and the greater solvent powers of the aqueous humour, may be regarded as the most desirable for the absorbent practice; the facility, also, of performing the operation, is as great as in any other description, from the perfect control, by means of the speculum, which the sur-

geon possesses over the motions of the eye. Those who perform extraction are wholly precluded the use of this instrument, as the least pressure made by it on the ball, during that operation, will occasion so large a protrusion of the vitreous humour and iris, as in all probability to cause a total failure of the operation.

Capsular, or Secondary Cataract, as it is usually called, is also acknowledged, by the advocates of extraction, to be very ill suited to that operation. This unfitness arises from two causes: first, from the danger of wounding, or otherwise injuring the iris, by the introduction of those instruments which are employed in order to extract the capsule; and, secondly, from the unavoidable rupture of the vitreous tunic, and consequent escape of the vitreous humour, which result from the forcible separation of the opaque capsule from the latter membrane, to which it is firmly united, and which becomes proportionably thickened, the longer the operation is delayed. These dangers are further increased, when, as is frequently the case, the capsule adheres to the posterior part of the iris; the injury which the iris sustains in se-

parating these adhesions is so great, and the subsequent escape of the vitreous humour is so copious, that obliteration of the pupil, or the total destruction of the organ from violent inflammation, are the usual consequences. In capsular cataract, without adhesions to the iris, Mr. B. Bell mentions, that success has never yet attended the operation of extracting it, the introduction of instruments into the eye always creating so much inflammation, as to defeat the operation; while Richter says, when the cataract is adherent, it frequently cannot be extracted at all. Wenzel states, that the iris is not unfrequently detached from the ciliary ligament, by the attempts at separation, and that blindness usually results.

When the operation of extraction is performed, in a case of *fluid cataract*, as soon as the capsule is punctured with the kisistome, the milky fluid escapes, but the capsule, which is generally opaque, remains, forming a case of simple capsular cataract, requiring extraction in the same manner, as when uncombined with adhesions, the fluid cataract being in most cases free of them.

All the dangers which have been pointed out,

as attendant on the extraction of *capsular*, *adherent capsular*, and *fluid cataract*, with opaque capsule, and which render the performance of that operation in the ordinary way so hazardous, are avoided by my modes of practice, by which they are as easily removed as any other species of cataract. I employ a curved needle, with which I lacerate the capsule, when it will admit of it, as freely as possible, the full extent of the area of the pupil, without detaching it entirely from the ciliary processes. Each portion, which is thus torn, shrinks up to the part at which it is attached, and it then ceases to be any obstacle to vision; but when the capsule is too tough and thickened to admit of laceration, I detach it from the ciliary processes, except at one part. I leave this attachment, in order to prevent the capsule from floating about in the vitreous humour, and then depress it, either below or on the outer side of the axis of vision. When the capsule adheres to the iris, it is necessary for the surgeon to use more caution, than in simple capsular cataract, lest, by its forcible separation, it might cause inflammation, or a separation of the iris from the ciliary ligament.

This opacity of the capsule, Professor Scarpa considers the most frequent cause of failure, in both the old methods of operating for cataract; and observes, that it would be a great desideratum, if the art of surgery possessed means of detaching the capsule, from the ciliary processes; while Richter thinks one of the chief advantages of depression, is, the removal of the capsule, as well as the cataract, to the bottom of the eye, being of opinion, that both are generally depressed together.

By my modes of operating, this desideratum is in a great measure obtained. In solid cataract, the capsule, as well as the lens, are cut in pieces, there being sufficient counter-resistance to enable the surgeon to do so. After the capsule is thus divided, it becomes absorbed in the same manner as the fragments of the lens. In fluid cataract, the capsule, when thin, ought to be lacerated as much as possible, and, when thickened, depressed in the manner just described. If, in either case, the surgeon is at first prevented from accomplishing these objects, and that the capsule is subsequently found to impede the passage of light, he is enabled to effect the re-

storation of the patient's vision by the mode of operating already described in cases of capsular cataract. During the year before the last, I performed this operation, in not fewer than thirty instances, and without the loss of an eye; the operation was completely successful in all, with one exception,—a case where, from the great density and elasticity of the capsule, it again returned to its situation soon after the needle was withdrawn. By repeating the operation, there is still, however, an equal chance of success as at the first.

Capsular Opacity, with a transparent Lens, is a state of disease which not unfrequently exists; and, whether the opacity be in the anterior or posterior part, the removal of the lens is equally necessary. There is, consequently, in this case, the two-fold danger, first, of opening the capsule, and extracting the transparent lens—secondly, the extracting the opaque capsule itself; unless, indeed, the practice recommended by Richter be adopted, of extracting both capsule and lens at the same time. From the danger attending the introduction of

instruments through the section of the cornea and pupil, in order to detach the capsule from its ciliary connexion,—from the copious escape of the vitreous humour, more especially when it is partly or wholly disorganized,—and from its attendant consequences,—this case is rendered one to which the old method of extraction is ill adapted, and which must generally fail of success.

These difficulties, as well as others already described, are avoided, by cutting the lens and capsule in pieces, and placing as many of the fragments into the anterior chamber as that cavity will contain, where they will soon become absorbed. If any part of the lens or capsule remain, it can be dislodged from the axis of vision by a second operation.

The same objections apply to the usual mode of extraction for *Capsular Opacity, with an opaque Lens*. Indeed, as the capsule, in this form of the disease, always adheres to the iris, this species of case may be regarded as still more unfavourable for that operation; in every instance, the introduction of instruments either to liberate the capsule, or, according to Richter's plan, en-

tirely to remove part of that membrane, becomes necessary; while the dangerous consequences attendant on extraction of the lens and capsule are the same.

The apprehensions justly entertained of extracting an adherent cataract, are confirmed by Richter and Ware. All dangers, however, are removed, by cutting in pieces a soft lens, and placing the fragments into the anterior chamber, provided the pupil be sufficiently large for the purposes of vision, in which case the adhesions to the posterior part of the iris afford a solid counter-resistance to the action of the needle; but if the lens be too hard for division, or the pupil be too small to admit the passage of the cataract, the operation for artificial pupil should be at once performed by making a transverse division of the iris. I have found, by experience, that in the greater number of cases, in which I have formed an artificial pupil, the cataract has been sufficiently soft to admit of immediate division, and thereby I have been enabled to obtain the absorption of the lens. I performed this operation of dividing the iris, and removing the cataract with which it was accompanied, on thir-

teen of the Greenwich pensioners; with the excepting of one; it was attended with perfect success in all the others. The death of that patient, from consumption, prevented the proposed enlargement of the pupil, by another operation.

The *Elastic Cataract*, as it has been improperly called, in consequence of its firm adherence to the capsule of the vitreous humour, is a species of the disease, in which the operation of extraction is as unlikely to succeed as almost in any other. To puncture or rupture the capsule is of no use, and no degree of pressure which can be made upon the eye-ball will effect the passage of the cataract through the pupil, (it being so firmly united to the vitreous humour,) without carrying a portion of that body with it. When this is the case, from the solidity and firmness it possesses, it in all probability, plugs open the section of the cornea, and thereby prevents its healing, in the manner I have related in two cases, where it ultimately produced failure of the operation.

In operating with my two-edged needle in the manner already described, this state of firmness in the vitreous humour, instead of being prejudicial,

conduces in the greatest degree to the satisfactory accomplishment of the operation, affording such counter-resistance to the action of the needle as to enable the surgeon to divide the thickened capsule, which division he could not otherwise effect. I have frequently operated upon this species of case, and have never failed to effect the perfect removal of the cataract; although I have more than once had occasion subsequently to extract a fragment of the thickened capsule, which had repassed through the pupil into the vitreous humour, and which obstructed vision, after it had been placed in the anterior chamber for solution and absorption.

When the *cornea is flat*, and *the iris convex*, the space between is so narrow, as to make it almost impossible to carry the knife across the anterior chamber, without wounding the iris. This is likely to happen even where there is no escape of the aqueous humour; but, if that accident occurs, the iris drops forward, and, coming in contact with the cornea, cannot escape injury.

Richter, Wenzel, and Ware, freely admit the

difficulties and the hazard attending the usual operation of extraction in this species of case; all of which are prevented, by dividing a soft lens, carrying the fragments into the anterior chamber for solution, and placing a hard one in it for extraction. By acting in this manner, from the convexity and bulk of the cataract, the iris is pushed backwards, and, in relation to the cornea, assumes a concave, instead of a convex form. There is then no difficulty in making the opening in the cornea, according to the mode which I have described, in which merely the point of the instrument is introduced within the anterior chamber.

Sometimes the *eye is so small, and sunk within the orbit,* that it is almost impossible, by carrying the knife across the anterior chamber in the usual manner, to effect the section of the cornea of a proper size; in order to do which, it is necessary that the plane of the iris should lay anterior to the level of the orbit. The consequence of its lying deeper, is, to occasion the necessity of the eye being turned inwards, in order to bring the outer margin of the cornea sufficiently forward,

by which the inner part of that tunic, being turned so much towards the inner angle, it is hid from the surgeon's view, and, if he proceeds to complete the section of the cornea, (while the eye is thus turned,) he must necessarily bring out the point of the knife, nearly opposite to the pupil, of course considerably anterior to the iris, and thereby form too small a section. If he attempt to obviate this difficulty, by pulling forwards the eye, by means of the knife, after it has entered the anterior chamber, he will, as observed by Mr. Ware, hazard a dangerous discharge of the vitreous humour.

In pursuing my practice of cutting in pieces for absorption a soft lens, and placing a hard one for extraction in the anterior chamber, the opening of the cornea being made vertically, and confined to the outer margin of that tunic, the patient is directed to turn the eye inwards, which brings the part operated upon, beyond the level of the orbit, and the opening is thus easily and safely accomplished of a sufficient size.

A *Spasm of the Muscles of the Eye* not unfrequently occurs in timid patients during

the operation, occasioning a spontaneous ejection of the lens, which is usually followed either by a protrusion of the iris and of the vitreous humour, with a contracted or closed pupil, or by the total destruction of the organ itself. Richter, Wenzel, and Bischoff, advert to this cause of failure in the operation of extraction, as it is usually performed.

Any endeavour to prevent this spasmodic action of the muscles of the eye, by means of pressure, either with the fingers or speculum, will be sure to increase the mischief; whereas, according to my mode of operating, during the use of the needle, in dividing a soft lens, or while bringing a solid one into the anterior chamber for extraction, the eye may be fixed without any inconvenience, this being the period when the alarm is greatest, and the spasm would be most likely to occur; should any violent spasm of the muscles take place subsequent to the opening of the cornea, there is much less danger to be apprehended, from the ease with which a protrusion of the iris may be returned, and from the horizontal position of the patient, which prevents so large an escape of the vitreous humour as must take place when he sits erect, in the usual

attitude, more especially when that humour is in any degree morbidly fluid.

When the *pupil is of a large size*, and dilates freely, *with a lens disproportionably small*, the cataract is very liable to become spontaneously ejected, and to be followed by a large escape of the vitreous humour, with its attendant mischiefs, namely, a contracted or closed pupil, inflammation, &c. In this case, the smallest convulsive action of the muscles of the eye, or the least undue pressure made after the section of the cornea is completed, will certainly produce the ejection in question. Bischoff notices this danger, and I have myself seen three instances, where a total failure of the operation of extraction took place in cases of this kind, which were in the greatest degree favourable to the absorbent practice*.

* One of these cases I have seen since the former sheets were sent to the press. It occurred to a respectable tradesman, residing in Devonshire, who had been my patient from the commencement of the disease, nearly seven years since, and whose intention was to have been operated upon by me. From this, however, he was deterred, in consequence of the advice given him by an eminent surgeon in this metropolis, to have the usual operation of extraction performed. The result has been, that one eye is become dropsical, much enlarged, and all light irre-

The cataract, in this species of case, is generally soft, and its absorption is effected without making any opening in the cornea; when the cataract is even too hard to admit of central division, by first placing it in the anterior chamber for extraction, it becomes equally impossible, in either case, that its spontaneous ejection can take place.

It often happens, the surgeon has to contend against difficulties exactly opposite to those which have been last described, namely, where the *pupil is of a small size*, and *the lens disproportionably large*. At other times, the pupil does not appear unusually small; it nevertheless happens, either from spasm of the circular order of fibres of the iris, or from an inherent indis-

coverably lost from gutta serena, produced by inflammation; although, as he informed me, some hundreds of leeches, and nearly three dozens of blisters, were applied to relieve it; and, in the other, the pupil is completely obliterated. In addition, his health has suffered in the greatest degree from the pain he has experienced, and from the means ineffectually employed, during six months, to remove the inflammation in question. This man's case was in the highest degree favourable for the absorbent practice, the cataract being of a soft consistence, the pupil large and moveable, and the anterior chamber capacious.

position in the pupil to dilate, that an injurious degree of pressure is necessary to be made upon the ball, in order to effect the extraction of the lens. The morbid consequences of this pressure have been already enumerated, and are admitted by Richter, Bischoff, Bell, and Pellier, who, in addition, state, that the vitreous humour may be forced out, and the lens left behind; to avoid these consequences, it has been recommended to enlarge the pupil with scissors, after the section of the cornea is completed.

By enlarging the pupil with a strong solution of belladonna, previous to the operation, the fragments of a lens which admits of division, can with facility be passed into the anterior chamber, and the same application will very much assist the surgeon in placing an undivided lens also into this cavity. If, however, the pupil be very small, the iris should be divided, and the lens placed with the iris scalpel in the anterior chamber preparatory to its extraction; in which case, the opening of the cornea, and the extraction of the lens, are accomplished, with even more facility than in common cases, as there is no danger that

any protrusion of the iris can impede the progress of the operation.

The *Cystic Cataract*, from its globular form, and large bulk, requires a very great dilatation of the pupil, and as the whole capsula propria of the lens is extracted, so large an escape of the vitreous humour is occasioned, as to hazard the total destruction of the organ, when the usual operation of extraction is performed. Richter mentions a case, where a third part of the vitreous humour followed the passage of the lens.

In such a case, I recommend the capsule to be opened with the two-edged needle, for the purpose of letting out the opaque fluid, which causes the enormous enlargement, and after placing the capsule in the anterior chamber, it is to be extracted with a hook, which may be done through an opening of the cornea, one-third the size which would be required in the common mode of extraction.

When the *Vitreous Humour is disorganized*, and the part of the eye formerly occupied by it, is

filled with a fluid similar to the aqueous humour, it is evident, that as soon as the lens is extracted by the old operation, the largest portion, if not the whole of the humour, will escape, there being nothing to retain it. In the greater number of cases, however, the cataract is spontaneously ejected as soon as the section of the cornea is completed, from the compression of the muscles of the eye, which always become spasmodically affected in a greater or less degree, after this step of the operation. An effect, also, which sometimes takes place, is an immediate collapse of the coats of the eye; at other times, inflammation, suppuration, a large protrusion of the iris, and obliteration of the pupil. Richter, Bart, Wenzel, and Bell, speak very strongly of the dangers attendant in this description of case, on the operation of extraction; and it is apparent, when we consider the erect posture of the patient, and the different steps of that operation, that one or other of the dangerous consequences which have been enumerated must ensue. This fluid state is by no means rare, particularly in old age, and indeed, I regard it as one of its attendants.

If the lens be sufficiently soft, it is my practice freely to divide it, when, as has been already observed, it will become spontaneously depressed, and prove one of the most gratifying circumstances, which can occur in the practice of the oculist. If, however, it should be found too solid for division, it ought to be first placed in the anterior chamber, and subsequently extracted in the manner I have recommended. From the horizontal position of the patient, and from no pressure being required in order to extract the lens, which is accomplished with a hook, no considerable escape of the vitreous humour can occur, unless the muscles of the eye are spasmodically affected, or unnecessary pressure be made, either by the surgeon, or his assistant. If, however, the iris should protrude, it may be returned in the manner already described; in this case, the cornea frequently heals more readily than when the vitreous humour is not morbidly fluid, there being no protrusion of the vitreous tunic between the edges of the cornea, to prevent union by the first intention. The plan proposed, in order to prevent the escape of the vitreous humour, by making the section of the cornea upwards, instead

of downwards, it has been shewn, cannot always be carried into effect; for, if the eye be much sunk, the difficulty usually experienced in making an incision downwards of a proper size, is much increased when it is attempted to be made upwards. Besides, unless it were the constant practice of the surgeon, he cannot be in general aware of this state of the vitreous humour, so as to act accordingly, the coats of the eye being in common equally distended, as if it was in a state of health; whereas, in my operation of extraction, I am at all times prepared, whether the vitreous humour be in a morbidly fluid or in an healthy state. I have frequently divided the cataract, in cases of fluid vitreous humour, and invariably with the happiest result, and have never known the fluid humour escape in sufficient abundance to be of any material detriment, when extraction has been conducted in the manner which I recommend.

The different cataracts above enumerated constitute the varieties to which the old mode of extraction is admitted to be inapplicable; inquiry has been subsequently made in what description of case, that operation may be performed with a

reasonable prospect of success? The answer is obvious:—Cases where the cataract is solid, unconnected with any morbid adhesion, and of a size proportionate to that of the pupil, the anterior chamber being also of a proper depth and extent.

But, even in this favourable case for the operation, it has been shewn, that accidents and dangers not unfrequently happen, which cannot be prevented by the utmost skill of the surgeon, and which are fully acknowledged by Richter, Wenzel, Ware, Bischoff, and Wathen. The first mentioned occurs in making the section of the cornea, namely, wounding the iris, which accident is a consequence of the premature escape of the aqueous humour, and may happen either in carrying the point of the knife across the anterior chamber, while effecting the punctuation of the cornea, as it is called by Mr. Wathen, or from the iris slipping under the edge of the knife, in bringing the instrument out at the lower margin of that tunic.

According to my mode of opening the cornea, the escape of the aqueous humour, which always takes place as soon as the first puncture is made,

can be attended with no bad consequences, as the mere point of the knife penetrates within the anterior chamber; after which, if the iris protrudes, it may be returned by gentle friction on the lid with the finger; and as the point and back of the knife, with which the opening of the cornea is enlarged, are both blunt, and its edge always kept close to the cornea, there is very little risk of wounding the iris, the protrusion, should it occur, being always at the back of the instrument.

In the expedition which is sometimes necessary to be used, while carrying the knife across the anterior chamber, in order to prevent the premature escape of the aqueous humour, either from the unsteadiness of the operator's hand, or from any sudden movement of the eye, the point of the knife may be accidentally carried behind the pupil; in the former case, should the incision be continued, the inner half of the iris must inevitably be slit across, or, in the latter, the point of the knife will pass obliquely through the lamellæ of the cornea, when the section will necessarily be made a great deal too small. The latter event may also result from

passing the point of the knife below the transverse diameter of the iris, or by its edge being brought out too near the lower edge of the pupil.

These accidents cannot occur in my mode of making the opening in the cornea; the point of of the two knives employed never at any time reach the outer margin of the pupil, consequently cannot pass behind it; it is impossible for the sharp point of the two-edged knife to pass obliquely through the lamellæ of the cornea, from the very small part of it which is carried within the anterior chamber, while effecting the puncture, which may always be made close to, and parallel with the iris; while, it is quite evident, no such apprehension can be entertained, from the use of the blunt-pointed knife.

The directions given by Mr. Ware, to make the section of the cornea nine-sixteenths the extent of that tunic, in order to prevent the necessity of making any considerable degree of pressure, in effecting the extraction of the lens, are no doubt very judicious; but then it is equally certain, that the liability of the vitreous humour, and of the iris, to protrude, is proportionate to the size of the section made in the tunic.

The morbid consequences resulting from pressure upon the eye-ball on the one hand, and the large section of the cornea on the other, are both avoided, by employing the hook to extract the lens, after it has been first placed in the anterior chamber, it being unnecessary to make any pressure, or so large a section of the cornea. Indeed, from being able to see the exact size of the cataract, the opening in that tunic can always be made proportionate to that of the cataract; whereas, in the usual mode of extraction, whether the cataract be large or small, fluid or solid, capsular or lenticular, the section of the cornea, according to Mr. Ware's directions, will always be made nine-sixteenths the circumference of that tunic. A case has been mentioned, when a cataract of the usual size, but of a gummy consistence, and whose nucleus was too solid to admit of division, was most satisfactorily extracted with a hook, through an opening in the cornea only three-tenths of an inch in extent, while the circumference of that tunic was by measurement thirteen-tenths of an inch.

The necessity of making an opening of the cornea sufficiently large to admit a free passage

of the lens, having been so frequently mentioned and insisted on, by the most eminent authors who have written on extraction, it must have been considered by them a most important step of the operation, and one on which the restoration of the patient's sight principally depended.

From their statements however, it is equally obvious, they were aware an opening of this extent could not always be effected according to the usual mode; whereas, no circumstance with which I am acquainted can occur, to prevent the opening of the cornea being made of a sufficient size, when the practice I pursue is adopted; and should the operator injudiciously attempt extraction, through too small an opening, he may without injury withdraw the hook, and subsequently enlarge the opening, when the cataract is hard and incompressible; or, if it is of a softer consistence, it will fall in pieces, and the fragments may be extracted separately. In either case, pressure upon the ball, which is the great cause of failure in the usual mode of operation, is entirely avoided.

After the section of the cornea is completed, the second step of the usual operation of ex-

traction consists in making an opening in the capsule with the kisistome, or some other appropriate instrument, which step is not exempt from dangers. Richter mentions the liability of wounding the iris, in effecting this part of the operation. Mr. Ware warns the surgeon against cutting through the edge of the cataract, in dividing the capsule, which, from the greater thinness of the lens, he says, is likely to happen, (unless caution be observed to open the capsule in its centre,) in which case pressure will cause the vitreous humour to escape, and the cataract to remain behind. There is, at all times, considerable danger to be apprehended, of a large quantity of the vitreous humour escaping, and of the consequent protrusion of the iris, from spasmodic action of the muscles of the eye, or lids, after the section of the cornea is completed, which danger is necessarily increased by the introduction of any instrument through the pupil, for, should it wound the iris, these morbid consequences will be almost inevitable.

It has been contended, that these dangers are avoided according to my mode of operating, by fixing the eye with a speculum, and dilating

the pupil with belladonna, previous to the passage of the cataract into the anterior chamber; in extracting which, should any spasmodic action of the muscles of the eye occur, there can be no spontaneous ejection of the lens; and if a protrusion of the iris, or of the vitreous humour, should result, the former may be again returned, while, from the horizontal posture of the patient, the escape of the latter will necessarily be much less abundant, than when the patient is erect, the section of the cornea of a larger size, and situated at the bottom instead of the outer edge of the cornea.

The third and last step in the operation of extraction, as it is usually performed, consists in forcing out the cataract by making gentle pressure upon the eye-ball. From circumstances, of which the surgeon cannot previously be aware, as well, indeed, as from its real nature under any circumstances, this step may justly be considered as attended with more immediate danger than either of the former; this arises from the liability of the vitreous humour to escape with the cataract, and the morbid consequences which usually result from it.

It may be further stated, that all the dangers enumerated by authors, in consequence of making the section of the cornea too small, causing the necessity of undue pressure, are to be in a manner dreaded, under various circumstances, as, from an adhesion of the circumference of the capsule to the iris, which still admits the contraction and dilatation of the pupil; an adhesion of the lens to the internal surface of its capsule; too small an opening in that membrane, more especially, when it is morbidly thickened; or, lastly, when the pupil becomes violently contracted from spasm of the iris, on cutting the cornea. Should, on the contrary, spasm of the muscles of the eye, undue pressure upon the ball, or the disorganized state of the vitreous humour cause an ejection of the cataract, so considerable an escape of that fluid will ensue, as to occasion a large protrusion of the iris, followed by violent inflammation, by partial or total obliteration of the pupil, and by secondary cataract. This protrusion of the iris beyond the eye-lids, if of a large size, will sometimes assume a conical form, and, from the pressure which it undergoes, produces pain and inflam-

mation during life. This occurrence is mentioned by Bischoff, and which I have myself witnessed. Protrusion of the iris, when of a large size, not unfrequently becomes strangulated, in consequence of the section of the cornea closing upon the protruded part, usually causing intense pain and inflammation of the eye, which continues sometimes for many months, and generally terminates in an extensive opacity of the cornea, which opacity as effectually prevents the recovery of sight, as if the cataract had never been extracted. The protrusion of the iris may thus occur during any of the stages of the operation, or at any time before the section of the cornea has healed.

Various methods have been proposed to prevent this fruitful source of failure; these have been described and examined. Richter objects to Daviel's mode of making the section of the cornea two-thirds the extent of its circumference, as it is, from its magnitude, calculated to admit the ready escape of the vitreous humour, and to occasion a protrusion of the iris; he therefore recommends the section to be made only one-half the size of that tunic. Mr. Ware advises it to be made nine-sixteenths of its extent.

Baron De Wenzel, in some cases, recommends the section of the cornea to be made upwards, instead of downwards. Mr. Wardrop advises that a considerable portion of the bottom of the cornea should be left; but, in all cases, as the iris falls in contact with the cornea, upon the escape of the aqueous humour, it is still likely to protrude, and to occasion a partial, or a total closure of the pupil.

The pressure usually employed, in order to extract the cataract, or the spontaneous ejection of that body, have been considered the principal causes of those protrusions of the iris, both of which are altogether avoided by first placing the lens in the anterior chamber, and then extracting it with a hook. Should the iris be forced through the section of the cornea, it may, without any difficulty, be returned by gentle friction upon the lids, or with the forked instrument already described. If it should even protrude some days after the operation, and occasion a contraction, or an obliteration of the pupil, so as to require a division of the iris, this may be accomplished with much more benefit to the patient's vision, when the protrusion occurs through the outer side of the

cornea, than if the protrusion had been in the lower part.

After the extraction of the lens, by the old operation, should any small fragments remain, it is usual, after using gentle friction upon the fore-part of the eye over the eye-lids, to remove them with a scoop. In doing this, spasm of the muscles of the eye will sometimes occur, and the capsule of the vitreous humour become ruptured, which latter accident occasions an escape of the vitreous humour, and a protrusion of the iris.

By extracting altogether the capsule with the cataract, according to my mode of operating, or by lacerating the capsule the full extent of the pupil, in either case, whether the particles of the cataract remain in the posterior, or float into the anterior chamber, they become dissolved by the solvent powers of the aqueous or the vitreous humours. Should the fragments, however, remain behind the iris, and not disappear with rapidity, they may be subsequently brought forward with the needle by an operation, slighter even, than that for capsular cataract.

The inquiry has been made, if these fragments certainly dissolve in my operation, why is it

necessary to remove them, when the usual method of extraction is performed? In the former case, the capsule is either altogether removed, or is so much lacerated as to prevent the lodgment of the fragments; whereas, in the latter, the capsule is entire, except the aperture which is made in the anterior part, for the escape of the crystalline lens. Another reason, which renders the removal of these fragments necessary in the old operation, is the liability of their passing between the lips of the section of the cornea, and, as Mr. Ware states, of causing such violent inflammation, as to hazard the destruction of the organ; whereas, when the opening of the cornea is made vertically, the lower part, within which the fragments of the cataract become deposited, is left untouched, where they can do no sort of injury. The vertical opening of the cornea, also, exempts the patient in a considerable degree from the morbid effects of an inversion of the lower lid; when this takes place, the lid insinuates itself between the edges of the section, when made in the usual manner, occasioning inflammation, and the same results, as when fragments of the cataract get between them.

If, from any cause, the section of the cornea does not heal by the first intention, and opacity results, it is more advantageous, it has been shewn, that this opacity should occur at the external side, rather than at the lower part of that tunic, inasmuch, as in the former case, it only prevents the patient seeing outwards, whereas, in the latter, he is prevented seeing forwards, and downwards.

De Wenzel says, that sometimes an hernia of the membrane of the aqueous humour results, from forcing a large lens through a small section of the cornea, causing great pain and suffering to the patient, a circumstance which has never occurred in any case, where I have performed my new operation of extraction.

Gutta serena has been also noticed, as an occasional consequence of the usual mode of extracting the cataract. I am unable to explain with certainty the cause of this morbid affection. It has, however, been supposed, that the copious escape of the vitreous humour occasions a sudden collapse of the retina, which, in consequence, becomes lacerated. This hypothesis appears to be in some measure confirmed by the fact, that,

in the majority of instances, in which I have seen this unfavourable circumstance immediately succeed the operation, it has been accompanied by an obliteration of the pupil, and the formation of secondary cataract.

Violent pressure upon the eye-ball, in order to force a large lens through a small pupil, will also produce gutta serena; but I have never seen an instance of the kind, when the cataract has been extracted according to the rules which I have recommended.

It will naturally be supposed, by the inexperienced reader, that if the skill of the operator, or the favourable nature of the case, should happily protect the patient from all these accidents and dangers, he then has the cheering prospect of having obtained a certain and permanent restoration of sight. It will, however, appear, by the following passages from Richter, under the head "Morbid Consequences of the Operation of Ex-" traction," that "That surgeon has only per-" formed half of his duty, who has dexterously " executed the operative part. The preparing the " patient for the operation, and the proper ma-

" nagement, 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*." He adds, " The success of this operation is always doubt- " ful, and the most dexterous oculist can never " promise, with certainty, a happy event, even " under the most favourable circumstances. A " trifling and unforeseen accident is often suffi- " cient 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. " 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†."

The first, and, as Richter expresses himself, (who, it must be kept in mind, was, at this time, the great champion of extraction,) " 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

* See Richter, page 146.

† Ibid. page 155, 156.

" restored by the operation, but altogether de-
" stroys it when violent*."

In irritable habits, where there is usually great susceptibility, it must be expected, inflammation will frequently result, from an operation which requires such considerable mechanical injury to be inflicted on the eye. It would, however, appear, from the general ill success of the operation, that inflammation is not confined to the unfavourable cases for extraction, but that it frequently comes on in apparently the most promising, and either wholly, or in part, renders the operation unsuccessful. This is strikingly illustrated by the ill success, which, it will be shewn, has attended extraction in France, notwithstanding the temperate habits of the lower orders in that country, the acknowledged dexterity of the operators, and their rejecting all cases, which are not favourable for the operation.

Inflammation may result either simply from extraction, although it be executed in the most satisfactory manner, or from any of the causes already enumerated, as attendant on the unfavourable cases for that operation. It may also come

* See Richter, page 147.

on from accidents, subsequent to the operation, such as touching the eye, the irritation caused by the friction of the eye-lashes against the ball, the bandage being applied uneven, or too tight, &c. The usual results of inflammation, from whatever cause they arise, are either secondary cataract, or opacity of the cornea, closed pupil, or total suppuration of the organ, any one of which is sufficient to cause failure of the operation.

Protrusion of the vitreous humour and of the iris may occur, many days after extraction, has to all appearance, been successfully performed. Richter mentions an instance of the former having taken place on the fifth day after the operation, from fright, occasioned by the house adjoining to that where the patient resided, taking fire; and I have myself seen protrusion of the iris, and closure of the pupil, ensue, from an accidental fit of vomiting on the tenth day after the operation. Coughing, sneezing, or any sudden, or violent exertion, will produce similar effects.

Having already fully enumerated the effects which ensue from a protrusion of the iris and of the vitreous humour, I shall not repeat them, but only

remark, that whether they occur during the operation, or at any time previous to the healing of the section of the cornea, the morbid consequences are the same.

Opacity of the capsule of the lens, or *secondary cataract,* is also a very frequent termination of this operation. It is recommended by all the authors on extraction, whom I have quoted in this work, (with the exception of Richter, whose directions to the contrary can, I am persuaded, be very rarely carried into effect, in the manner he proposes,) that the anterior part only of the capsule should be opened, in order to admit the escape of the lens, but that the whole of that membranous bag should be left in the eye, except when it is opaque; this proves a frequent cause of secondary blindness. The formation of this secondary cataract may occur from inflammation a few days, or weeks after the operation, or it may come on months, or years afterwards, without any inflammation at all. Another source of blindness, in consequence of the capsule being left in the eye, arises from its afterwards forming adhesions to the iris, without any apparent cause, and producing a closure of the pupil, which obliteration,

it is scarcely necessary to remark, is of a nature entirely different from that caused by protrusion of the iris.

Opacity of the cornea is also a consequence of the section made in it, being prevented from healing by the first intention; in such a case lymph is carried to the part, in order to effect the healing process, which lymph being either too abundant, or becoming organized, constitutes an opacity of the transparent cornea. The loss of sight will necessarily be proportionate to the size and degree of the opacity, and its interference with the free passage of the rays of light to the retina. This source of failure may occur after the most successful extraction of the cataract; for, if protrusion of the iris happens from any cause, strangulation is very likely to arise, by the section of the cornea closing upon it, attended by violent inflammation.

Ulceration, or Sloughing of the Cornea, in consequence of the opening made in that tunic not healing* by the first intention, may also occasion

* I have seen a case, which proceeded, for the first ten days, as favourably as could be wished, when, after the cornea had united without being entirely healed, ulceration took

failure of the operation of extraction, even when, from its happy execution, there was every reason to hope for ultimate success.

These are sources of failure consequent on the peculiar nature of the operation, and in no respect, dependent either on the skill or dexterity of the operator.

I have already adverted to the fact, of the greater degree of success which has attended the couching or depression of the cataract, in consequence of the alteration of practice, which has been adopted in that operation, since the solvent powers of the aqueous and vitreous humours have been well understood, and the existence of the absorbents ascertained; and I have ventured to point out the propriety, of giving distinct appellations to the two modes of practice, which are as different in principle and mode of execution, as in success. Prior to Mr. Pott's time, the fluid and soft cataract, which experience has proved to be the most favourable species for the operation, that

place, and, notwithstanding every possible means were used to arrest its progress, it destroyed more than one half of that tunic before its progress could be checked, which necessarily entirely defeated the success of the operation.

the surgeon can meet with, were considered, equally by the advocates and adversaries of depression, to be incurable by that operation. Mr. Pott, whose writings first conduced to throw such brilliant light upon the science of ophthalmic surgery, as well as Mr. Hey, who closely followed his practice in this respect, were content simply to lacerate the capsule of a soft lens, and to expose it to the action of the aqueous humour, leaving it in situ for solution and absorption.

Professor Scarpa, on the contrary, never exposed a cataract to the action of the aqueous humour in this manner, preferring at all times to depress it in the vitreous humour, when its solidity admitted of it. If, however, it broke in pieces in the attempt to accomplish this object, he then placed the fragments in the anterior chamber.

It being, therefore, the solvent powers of the aqueous and vitreous humours, which have rendered the operation hitherto called couching, or depression, in any degree an eligible one, it has been a material object of this work, to determine, by facts and arguments, which of these two humours

possess this power in the greatest degree, and in which, the cataract can be placed for solution and absorption, with the least inconvenience to the patient, and the greatest probability of his ultimate restoration to sight. I feel persuaded, from what has been advanced, that it will be admitted, the aqueous humour, does not only possess a much greater solvent power than the vitreous, but that, by placing a part or the whole of the divided portions of a lens into the anterior chamber, the dangers and inconveniences attendant on depression are in a very great degree avoided. The question then naturally arises, whether the eminent authors, who have so materially contributed to bring the absorbent practice favourably before the notice of the profession, have availed themselves of the solvent power possessed by the aqueous humour as much as they might, or as I have done, and whether the construction of their instruments, is as well calculated as mine to carry it fully into effect.

Mr. Pott employed the old spear-pointed, broad-shouldered needle to depress the cataract, or to lacerate its capsule, in order to admit a free pas-

sage for the aqueous humour to flow in, and act upon the opaque lens, for the purpose of effecting its solution and absorption. In general, he permitted the cataract to remain in situ, although he sometimes pushed the broken fragments through the pupil into the anterior chamber, for the same purpose.

Mr. Hey very much reduced the size of the needle employed by Mr. Pott. The point of the one he uses, instead of being spear-pointed, is rounded, increasing in thickness upwards, like a wedge, and has blunt edges. Mr. Hey, like Mr. Pott, recommends that the lens, when hard, should be depressed; but, when soft, he advises to lacerate the capsule, simply for the purpose of admitting the free passage of the aqueous humour to the cataract to dissolve it, allowing it to remain in situ for that purpose; but he says, when the opportunity is convenient, the broken fragments are to be placed in the anterior chamber.

Professor Scarpa employs a curved-pointed blunt needle, with which he endeavours in all cases to depress the cataract in the vitreous humour, when the solidity admits of the performance of that operation (thereby giving it a marked

preference) and he only places those fragments which he is unable successfully to depress, into the anterior chamber for solution and absorption.

From the description which has been given of the needles employed by Mr. Pott and Mr. Hey, it is evident, that neither of them are adapted for dividing a lens of any degree of solidity, and that, unless the consistence of that body be so very soft as to be *easily broken down* with the blunt instruments which they recommend, instead of being able, fully to carry the absorbent practice into effect, the operator is necessarily obliged to depress the cataract.

Professor Scarpa's needle being constructed for depressing, instead of dividing, the cataract, (as he always prefers depression to a division of that body,) is equally ill adapted to the latter object as the others; his practice, however, of placing any fragments of the lens or capsule, through the pupil, into the anterior chamber, for absorption, is in every way preferable to permitting them to remain behind that aperture; but the curved point of his needle is not so well constructed for that purpose as if it were a straight one, although unquestionably better adapted to depression.

The small spear-pointed, sharp-cutting needle, which I employ, is evidently well calculated to divide a lens for solution and absorption, and the surgeon will be enabled to divide with it one of much greater solidity, than he could possibly do with any of the three instruments just described, and which, it will be recollected, are all blunt*. This construction of the needle is of great importance, not only in effecting the division of the cataract, but also in penetrating the coats of the eye so easily, and in dividing the cataract so expeditiously, in comparison to a blunt instrument (even when a cataract admits of being broken down by the latter,) insomuch that both the degree, and duration of the pain in the operation are materially lessened. I have, indeed, witnessed so many striking proofs of the trifling pain which its performance occasions, that I have every reason to believe it does not usually exceed

* In the letter already mentioned, which I received some time since from Mr. Hey, he says "I am much obliged to you for the present of your needle, which seems extremely well formed "for cutting up a *firm cataract*, after the manner which "you operate." He afterwards adds, "My needle was not "contrived for the purpose of cutting up a *hard cataract*, "my practice having been to remove a *hard cataract* from its "situation."

what is felt by the patient when bled in the arm*. After the division of the cataract has been effected, I find no difficulty in carrying the fragments through the dilated pupil, into the anterior chamber; whereas no application having been used by Mr. Pott, Mr. Hey, or Professor Scarpa, to effect its dilatation, they necessarily must have frequently experienced difficulty in bringing these fragments forward, as well as endangered the iris by the point of the needle, in their efforts to pass the fragments through it.

The other question, and one indeed of still greater importance which remains for examina-

* I once performed an operation for cataract on an old lady at Bath, in the presence of several professional gentlemen of respectability, resident there. Her apprehensions of the operation were so great, that appetite and sleep forsook her for many days previously to its being performed, and which she could be prevailed on to submit to, only, after having seen me operate upon another patient. Although seventy years of age, the cataract admitted of complete, and perfect division. After I had withdrawn the instrument from the eye, she anxiously inquired when I intended to begin, and it was with considerable difficulty I could persuade her the operation had been happily executed. The ultimate termination corresponded with its execution; and I have frequently heard of my patient, who, although now upwards of seventy-five years of age, sees the minutest objects assisted by a cataract glass.

tion, relates to the nature of the operation, and to the consideration, whether the practice of leaving the lens, after its capsule has been lacerated, to become absorbed in situ, as recommended by Mr. Pott and Mr. Hey, or placing it in the anterior chamber, is to be preferred. This question has been already answered generally, but few are better qualified by experience, than myself, to speak decidedly upon this point, and upon the different effects of the two modes of practice.

I object to the practice of leaving the opaque lens to be absorbed in situ, after lacerating the capsule, and loosening its texture with the needle, because, in consequence of the latter part of the operation, an uneven pressure is made by the broken fragments of that body against the posterior surface of the iris, frequently giving rise to severe and dangerous inflammation; besides which, solution and absorption of them, are by no means effected so rapidly, as when they are placed in the anterior chamber.

Such was Mr. Saunders's practice, while I was with him, and which I pursued for some time,

after I first settled in Exeter; I however often found the inflammation so very severe, and the necessity of repeating the operation so frequent, that I shortly abandoned it altogether, in favour of that which I now exclusively practise. By this change of practice, and by the use of the needle which I employ, inflammation very rarely follows. From the greater solvent power also of the aqueous humour, in the anterior chamber, I am enabled, by placing the fragments of the cataract there, to effect their removal in half the time, and by one, or, at most, two operations, while, formerly, when the cataract was left to be absorbed in situ, it was frequently necessary to operate four or five times, to effect the same object.

Subsequently to my quitting Mr. Saunders's tuition, he adopted the anterior operation of Conradi, which operation, on the following grounds, I think it my duty again most strongly to condemn: First, if the same object can be accomplished by one, or, at the most, two operations, by a different process, equally safe and easy of execution, and attended with as little pain and inflammation, both expediency and humanity

forbid the use of an operation, which often requires to be performed ten or twelve times.

A second, and a most important objection to be urged against it, is, that even after its frequent, and what is considered its *successful* performance, the eye is left in a very imperfect state for the general purposes of distinct vision; for, as the directions given by the editor of Mr. Saunders's posthumous work, are, to "permanently destroy the central "portion of the capsule," to an extent "*which* "*does not exceed the natural size of the* "*pupil**," it is obvious, that the natural dilatation of the pupil, can be of no benefit to the patient's vision, when an opaque capsule remains behind it, which impedes the passage of light, as effectually as if the pupil were fixed and contracted. Thus, it happens, at night, when the pupil dilates to the utmost, in order to admit as much light as possible, the opaque capsule impedes the admission of all rays, excepting those which pass through its small central aperture. The lateral extent of vision must also necessarily be much limited, for, as the pupils

* See Mr. Saunders's Posthumous Work, page 142.

in herbiferous animals are in form transversely oblong, for the purpose of giving a very extended field of vision, so I have observed, that its lateral extent is proportionably diminished in the human eye, when, either the pupil is contracted, or the central opening in the opaque capsule, is of a small size.

I have related a very instructive instance of the former kind, in my work on Diseases of the Eye, in the case of John Mercer, (Case 10.) who, after undergoing five operations in the London Eye Infirmary, during six months, was dismissed as cured, the medical officers of that institution, declining to attempt any further operation upon his eye, lest, as they said, he should "risk "the loss of what he had already gained." He was brought to me for advice, by one of my poor patients, Jan. 1812. I found the pupil of the right eye, (the left eye being affected with gutta serena,) of the contracted size, represented in Fig. 1. Plate 2. in my work on Diseases of the Eye. He could, by day, discern minute objects, when placed immediately before him, tolerably well, and he could walk in the streets without a guide, but, from the contracted state of the

pupil, his sphere of vision was so circumscribed, that he could not without difficulty avoid objects which were not immediately before him; and, on one occasion, was nearly run over by a carriage crossing him at a right angle, which he did not perceive, till the pole to which the horses were harnessed, struck him in the breast. At night, he was unable to walk out without a guide, or to cut his food, by the light of a candle. His great anxiety was to be " enabled to see " sideways," which power he obtained in a very short space of time, by my making the transverse incision of the iris in the manner already described in this work, and thereby forming an artificial pupil. The operation was performed on a Tuesday morning, and by the assistance of this eye, he was enabled to resume his employment, of selling fish about the streets, the Saturday following, without experiencing the least unpleasant consequence. In a week, he could see to read small print with fluency, and in a fortnight to see his finger-nails, when his arm was extended to the utmost at right angles with the body, almost as distinctly as he could before my operation, when the hand was placed before his eye. He now

walked in the streets by night, or day, alone, with the utmost security, and could see to read, and write by candle-light. Within a month after the operation, he told, with accuracy, the time, by St. James's church clock, across Piccadilly, by moon-light, and from use his vision has considerably improved*.

As a small central aperture, in an opaque capsule, produces precisely the same impediments to vision, as a fixed and contracted pupil, I have thought it necessary to insert the above case, in elucidation of the doctrines I have advanced, and to shew how completely the attendant inconveniences are removed, by affording a free passage of the lateral rays of light to the retina.

It may, perhaps, be supposed, from what has been said of the effects of pressure, from the fragments of a divided cataract, against the pos-

* Within the last week of committing these observations to paper, I have had an opportunity of exhibiting this case to several respectable surgeons, and comparing the present state of the artificial pupil, with the representation of it given in my work on Diseases of the Eye. They all agreed that the case was now, at the end of four years, better than is represented in the plate, and he read small print to them with great fluency.

terior part of the iris, that, notwithstanding the nucleus of a hard, and solid lens, be cut in halves, it is unsafe to place them in the anterior chamber without farther division, more especially in elderly persons; but my general experience has convinced me, that where this division has taken place, inflammation is rarely experienced during its solution, whatever may be the consistence of the cataract, or age of the patient.

This will be no matter of surprise to those, who are acquainted with the active solvent powers of the aqueous humour; a very remarkable proof of which is related in my work on Diseases of the Eye, the case is mentioned by Mr. Cline, in his surgical lectures, delivered at St. Thomas's hospital, where, " from a violent spasm of the " muscles of the eye-ball, after the point of the " knife had entered the transparent cornea, it " was broken off, and remained adhering to its " inner surface. Mr. Cline examined the eye " next day, and found that the point of the knife, " which had been broken off, was become rusty; " the fifth day the aqueous humour was turbid, and " of a rusty colour. On the tenth day, this mud- " diness had completely disappeared, and the eye

" looked well and healthy, the point of the knife " having been completely dissolved and removed " by absorption. The sight of this patient, who " was an old man, was afterwards fully restored " by the successful extraction of the opaque " lens."

The morbid consequences which frequently occur, after the apparently successful performances of *depression*, have been in part already mentioned; to these may be added inflammation, (the immediate effect of the mechanical injury inflicted on the organ, during the operation,)—causing secondary cataract,—closure of the pupil,—or total suppuration of the eye. Secondary cataract may be produced, either by a portion of capsule still adhering to the ciliary processes, and becoming opaque, or by the formation of an adventitious opaque membrane, from inflammation, after the capsule has been freely lacerated, and, to all appearance, entirely removed.

The operation of depression is exempt from all the accidents, which frequently attend the opening of the cornea in the operation of extraction, not only protrusion of the vitreous humour, and

of the iris, but closure of the pupil also, accompanied by opacity of the cornea, with ulceration, and sloughing*.

In the *absorbent practice*, when the operation is successfully executed, none of the foregoing dangers, excepting inflammation and its attendant consequences, are to be apprehended; by placing the divided lens in the anterior chamber, the fragments become dissolved and absorbed, without causing any inconvenience, and the capsule, as well as the lens, being either freely cut in pieces during the operation, or placed out of the axis of vision, not only prevent the possibility of secondary cataract, but also of that species of closed pupil, caused by the capsule's remaining, and contracting adhesions to the iris, a circumstance which cannot occur, without the existence of the capsule. The dangers attendant on opening of the cornea are also wholly avoided, and amaurosis, as a sequel to the operation, is very rarely to be apprehended; when it does occur, it is the result of subse-

* See a paper on Mortification of the Cornea, by Professor Maunoir, published in the Edinburgh Medical and Surgical Journal.

quent inflammation, and not of any part of the operation, causing a large and sudden escape of the vitreous humour, which is supposed to be the cause of that symptom in the usual mode of performing extraction, or of the pressure of the lens upon the retina, subsequent to the operation of depression.

These facts, together with the arguments which have been advanced, will, upon investigation, I am persuaded, fully bear me out in my original position, *that the operation, having for its object the removal of the cataract and capsule by solution and absorption in the anterior chamber, should always be preferred to every other mode, when it can be accomplished with safety;* it combines the advantages of both the older operations, namely, the safety and facility of execution of depression, and the certainty of the removal of the cataract by extraction; and is in a great measure alike exempt from the objections and dangers urged against them. Indeed, from the necessity of cutting in pieces, or lacerating the capsule freely, during the division of the cataract, in order to place the fragments in the anterior chamber, that source of secondary blindness, and of closed pupil, is completely re-

moved, which is not the case in either of the older operations. In extraction, the capsule is always suffered to remain in the eye, when in a state of health at the time of the operation, and, when depressed, it is liable, with the lens, to reascend, and again obstruct vision; the cure, then, is much more complete and permanent in the absorbent practice, than when either depression or extraction are performed.

When the nucleus of the cataract is too solid to admit of division for the *absorbent practice*, and, from that cause, requires to be *extracted*, the peculiar manner in which I perform the operation, renders it less liable to those accidents and causes of failure, which attend the old operations of extraction and depression. The tendency of the lens to return to its situation, or of passing through the pupil into the anterior chamber, as well as of pressing upon the retina, and causing gutta serena, (which it is proved frequently occurs in depression,) are obviated by its entire removal. By the entire extraction of the capsule with the lens, or the free laceration of it with the needle, subsequently to its being placed into the anterior chamber, this common source of se-

condary cataract, or obliterated pupil, is removed. The surgeon, also, by first employing the needle to place the lens in the anterior chamber, previously to the opening of the cornea being made, has the opportunity afforded him to divide the lens for solution and absorption, if its consistence will admit of it; which, as already observed, is not possible, when extraction is performed in the usual manner.

This operation, in common with the older one of extraction, is liable to the morbid consequences which attend opening the cornea, but, as has been shewn, by no means, in an equal degree; owing to the situation, and smaller size of the opening, when made according to the plan I have recommended.

The danger of a closed pupil, from protrusion of the iris, and from an adhesion of the capsule to that membrane, is also in a great degree avoided, as, the iris, if it protrude during the operation, can, without any difficulty, be returned within the opening of the cornea; and, as has been already stated, from the opening being vertical, and of a smaller size, the iris is infinitely more capable of resisting, without any protrusion, the

weight and pressure of the vitreous humour, than when more than one-half of that tunic is opened at the bottom. The iris is also much less likely to protrude after this particular operation, than in the usual mode of performing extraction; but, should it occur, an artificial pupil may be formed with more facility, and will be more advantageously situated for the purposes of vision. The second species of closed pupil is also wholly prevented, by the removal of the capsule of the lens, without the existence of which, it cannot take place.

For the same reason, opacity of the cornea is not so likely to occur; if it should, the impediment to vision will not be near so great, as if it were seated at the bottom of the cornea, where it would intercept the rays of light in that direction in which the eye is most frequently used; whereas, when the opening is made as I recommend, the opacity can only impede them laterally and outwards.

The last question to be considered, is, which of the two methods should be preferred, the employment of the needle, in order to place the lens in the anterior chamber for extraction, or pressure upon the ball to effect the latter

object. This question has been partly answered, by pointing out the considerable proportion of cases, where it is quite obvious, that the eye sustains infinitely less mechanical injury, by the introduction and use of my fine needle, than by the considerable degree of pressure required to effect the same object. In the most favourable cases for the free passage of the lens through the pupil, when pressure is employed, the liability of the vitreous humour to escape with the cataract, more especially when it is in a fluid state, is much more conducive to the failure of the operation by producing inflammation, and other morbid consequences attendant on its escape, than the use of the needle in the manner I have recommended.

In order to elucidate these positions, it may not be improper to state, that I have known repeated instances, where the usual mode of extraction has been performed in one eye of a patient, and my method in the other; in the former, a very great degree of inflammation resulted, and not the slightest supervened in the latter. Two recent instances which have fallen

under my observation are strikingly illustrative of this fact.

The first was of a gentleman who underwent the usual operation of extraction in the country, performed by a skilful surgeon; and, notwithstanding the cataract was successfully extracted, the patient was afterwards attacked with such severe inflammation, that, according to his statement, he must have lost upwards of *seventeen pounds of blood* before it could be arrested, which, together with the other means employed, reduced him so much, that his health is not yet restored, although the operation has been performed upwards of two years. By these active measures, the eye was however saved, which, otherwise, in all probability, would have been utterly destroyed; but the degree of vision at first obtained, has since been lost by gutta serena. I have since operated upon the other eye, by first placing the undivided lens into the anterior chamber, and subsequently extracting it with a hook. Not the slightest inflammation supervened, and, within ten days after the operation, even before the section of the cornea had entirely healed, the

patient told me the time, to a minute, by my watch, assisted by a cataract glass.

The second instance is a patient of my own, on whom I was induced, for particular reasons, to perform the usual mode of extraction, in one eye. A very severe inflammation resulted from the degree of pressure necessary to extract the lens, which was of a large size, comparatively to that of the pupil. This required the repeated free abstraction of blood, notwithstanding the patient had been fully prepared for the operation, by regimen and medicines. In the other eye, in which I placed the lens into the anterior chamber, with the needle, preparatory to its extraction, he experienced no inflammation, and perfectly recovered his sight, without the loss of a single drop of blood.

These two cases are, I conceive, calculated to prove, that a less degree of inflammation results from my mode of extraction, than from that which is usually employed. By the use of the needle, in the removal of capsular cataract, or in dividing a soft lens, and placing the fragments in the anterior chamber, inflammation, after the operation, is a rare occurrence; on the contrary, from the

injury which the eye at all times sustains by any considerable degree of pressure made on it, and which is fully acknowledged by all the authors who have written on the subject, my professional readers will readily perceive, that, in the usual operation of extraction, the eye must frequently be much more liable to suffer from severe inflammation; consequently, that the probability of a successful termination, is much greater in the former than in the latter operation.

CHAPTER IV.

SECT. II.

Opinions of Authors respecting the Operations of Depression and Extraction.

THE following are the objections alluded to in the first section of this chapter, as having been respectively advanced, against the rival operations of depression and extraction, by some of the most eminent authors, who have written on cataract.

Mr. Wathen, whose words I shall here copy, has, in his Dissertation on Cataract, published the opinions of some of the most eminent surgeons, in regard to the operation of depression, previously to the solvent powers of the humours of the eye having been understood, and acted upon. He says, " In the year 1716, which was almost as soon " as the true nature of the cataract was known to " any degree of certainty, though the operation of " couching for it had been practised time imme- " morial; in that year Hovius, in his Tractatus de

" Circulari Humorum Motu in Oculis, inveighs " severely against it*."

" Professor Raw, as we are told by Mr. Heis- " ter, observed in his lectures, that he regarded " it as one of the most uncertain in all surgery; " and had met with so little success from it, " that, after repeated trials, he had determined " to use it no more†.

" It is also observed, by Heister himself, that " though this operation is easy to be performed, " the success of it is very precarious‡.

" In his cases, published fourteen years after " his surgery, the same opinion of this operation " is confirmed by a multitude of instances in " which it failed. He there relates, that amongst " the great numbers couched by Taylor, Mein- " ders, Hilmer, Cyrus, Eizenbert, and others, " very few met with the desired success; and " more particularly of those operated upon by " Taylor, with whose practice he was best ac- " quainted. Of the vast numbers couched by " the operator last named, in the years 1750,

* Hove de Cir, pages 121, 122.

† M. Heist. Med. Chi. and Anat. Observations, pages 5, 6.

‡ Heister's Surgery, part ii. sect. ii. page 407.

" 1751, 1752, in the principal cities of Germany,
" not one in a hundred recovered their sight.
" He further observes, that he saw, in several
" different places, many miserable objects, in
" tormenting pain, arising from the inflammation
" consequent upon the operation; and that, of
" those who were restored to sight, there was
" scarce one in ten, who did not, sooner or later,
" lose it again.

" Much as was to be placed to the account of
" the operator (when speaking of the manner in
" which these itinerants treated their patients),
" it was still Mr. Heister's opinion, that there
" was a great uncertainty attending the operation
" itself. To this purpose he largely insists upon
" its inefficacy, as proved by experience, and
" begins his observations with saying, ' they were
" the result of what had passed in Germany for
" the space of fifty years*.' "

Mr. J. Sharp, in his Treatise on the Operations of Surgery, published 1739, observes, " that the
" troublesome ophthalmies, which sometimes fol-
" low the operation of couching, together with
" the uncertainty of success which always at-

* See Wathen's Dissertation on Cataract, page 47, 48, 49, 50.

" tends it, have deterred most surgeons from " undertaking it*."

Mr. Pott, and several other authors of great eminence and respectability (who wrote when the solvent powers of the humours of the eye were known and acted upon) on the contrary, speak in favour of depression, and strongly condemn the operation of extraction.

Mr. Pott says, " It may possibly be supposed, " that I have conceived a prejudice against the " operation of extraction. Of this, I am not con- " scious. I have sought and embraced every " opportunity, which a public hospital, and many " years' practice, have afforded me of operating " in both ways, and of comparing the conse- " quences. I have seen many of the patients of " others, not only of the gentlemen of the pro- " fession, but of most of the itinerant operators; " and am thereby convinced, that the greatest " part of the objections of couching are invalid, " and have not been the result of unprejudiced " experience, or a candid regard for truth *(that*

* Sharp's Treat. on Oper. of Surgery, chap. xxiii. page 155. See also De Wenzel on the Accidents produced by Couching, page 32.

" *only the fair and prosperous side of the question,* " *regarding the operation of extraction, has been* " *industriously exhibited, while its manifold fail-* " *ures and ill consequences have been as indus-* " *triously concealed)*; and that, upon a fair " detail and comparison of all the advantages " and disadvantages, conveniences and incon- " veniences attending each, the preference will " be found justly due to the needle. Inconve- " niences and disappointments they are both " liable to. I heartily wish they were not; but, " from the most cool and candid attention to " facts, I am convinced, that the former are " much greater, and the latter much more fre- " quent, in the operation of extraction, than in " that of depression, executed with the same " degree of judgment*."

Benjamin Bell, after combating some of the objections against depression, adds, " But these cir- " cumstances alone should not be allowed to decide " a question of such importance; the ultimate and " permanent effects of the two operations ought " alone to have weight in our opinion. Now " from much observation, it appears clearly to

* Pott's Chirurgical Works, vol. iii. page 207.

" me, that the operation of couching proves, upon " the whole, more successful than the other; " that is, vision is as perfectly restored by " couching, and, *cæteris paribus*, a greater pro- " portion of those who submit to it, receive " benefit from it, than of those who undergo the " operation of extraction.

" With those who have not had frequent op- " portunities of observing the consequences of " extraction, it proves always a very deceiving " operation. The removal of the cataract is in " most instances attended with an immediate " return of vision, much to the satisfaction of " both the patient and operator; but, in a " great proportion of cases, even of those which " at first have every appearance of proving suc- " cessful, although vision may be tolerably per- " fect for some months; yet, it generally grows " more indistinct, till at last the patients become " altogether blind. This is the result of my " observation, and it corresponds with the event " of the operation, when performed by various " good operators.

" The late Doctor Young, of this place, who " practised surgery for a considerable time with

" much reputation, had, at one period, a very high " opinion of this operation. In the second " volume of the Edinburgh Physical Essays, he " gave an account of his success in six cases in " which he had operated a few months before, " and which, at the time of writing the paper, " appeared to be remarkably great; but in a " conversation with the doctor on this subject, " a good many years afterwards, I found his " opinion much changed. The Doctor's obser- " vations on the consequences of extraction were " exactly similar to those that I had made on it. " In the greater number of patients upon whom he " had operated, vision was restored immediately " on the removal of the cataract: but, in nearly " the whole of them, the sight began to be im- " paired in a few months from the operation, " and became gradually worse, till total blind- " ness at last was produced*."

Warner observes, " These two accidents, (a total " closure, or an irregularity in the size, and shape " of the pupil,) I have known to happen unavoid- " ably from the operation of opening the cornea,

* See Benjamin Bell's Comparative View of the two Operations for Cataract, in the fourth volume of his Surgery, pages 251, 252, 253.

" and extracting the cataract; but never, that I " remember, from couching, unless the iris has " been inadvertently wounded with the needle, " which a skilful operator will always avoid.

" The accidents of the greatest importance, which " sometimes attend the operation of extracting " the cataract, are a sinking down of the globe of " the eye, a deformity, and an irrecoverable loss " of sight, proceeding from too great an evacua- " tion of the vitreous humour at the time of " operating.

" The principal inconvenience of note attend- " ant upon couching, is the cataract's rising again " after it has once been depressed; from whence " arises the necessity of repeating the operation, " and very often with a probable view of suc- " cess*."

Gooch says, " It being now generally believed, " that the patient is more liable to bad accidents, " in consequence of extracting, than in de- " pressing the cataract, Daviel's method loses " credit with many of the most eminent of the " profession; and, in several instances, I have

* Warner's Description of the Human Eye, and its Diseases, pages 107, 108.

" observed such bad consequences, as could not " have happened by depression, particularly in " one case, though the celebrated *Wenzel* was the " operator*."

Lucas (of Leeds) remarks, " It has been, and yet " remains, a disputed point, whether it is more " advisable to attempt the cure of a cataract, by " depressing or extracting it. Depression is a " more simple and less difficult operation; is " neither tedious, painful, nor hazardous; is less " liable to be succeeded by violent inflammation, " and, though the first operation fails, yet a cure " may generally be accomplished by a repetition " of it. As extraction affects all it is capable of " doing, at one operation, the cure is more speedy " than by depression; but an imperfect vision in " some cases has succeeded, from remaining " portions of the capsula which might still be " removed by the needle†."

Mr. Sharp, in his Critical Inquiry, makes the following observation:---" Now, after some trials, " it (extraction) seems rather to have fallen into " disrepute, and I apprehend will be entirely

* Gooch's Chirurgical Works, vol. i. page 351.

† London Medical Inquiry, page 253.

" discarded in favour of couching. To be candid " (he continues), I perceive that the difficulty of " performing the operation is too great to be " universally practised*."

Professor Scarpa, after alluding to the exaggerations which the advocates of extraction and depression respectively have resorted to, says, " Observation and experience, however, the great " teachers in all things, seem to have pronounced " in favour of the ancient method of treating the " cataract, or that of depression; not only be- " cause *depression* is more easily executed than " extraction, and can be equally employed in " every species of cataract, whether crystalline " or membraneous, solid or fluid; but because " depression is attended with symptoms far less " violent and dangerous, than those which very " frequently happen after extraction; and if, from " any accidental cause, this operation should " occasionally prove unsuccessful, it may be re- " peated two or three times upon the same eye, " without any risk; a circumstance which *ex-* " *traction* does not admit of, when that operation " has not had the desired success.

* Sharp's Critical Inquiry. Cooper, 37.

" Influenced by these facts, I have, for a con-
" siderable time, laid aside the method of treating
" the cataract by extraction, and have applied
" myself entirely to the practice of depression,
" and I see continually great reason to be satis-
" fied with the choice which I have made*."

Baron de Wenzel, whose success in the operation of extraction, if ever equalled, has certainly never been exceeded, according to a statement made to me by Mr. Doratt, late surgeon in ordinary to his Royal Highness the Duke of Sussex, had latterly altered his opinions in its favour. Mr. Doratt informed me (while witnessing my operation of dividing a solid lens for the absorbent practice) that he was present at one of the last operations performed by the Baron in this country, when he described to him an operation, by which he proposed to cut the lens in pieces for solution and absorption, and which, he assured Mr. Doratt, he would pursue in preference to extraction, were he again to select his mode of operating.

I should hesitate to give to the world this account, upon the authority of a mere verbal

* Scarpa's Practical Observations, p. 253.

communication made by the Baron, were not the probability of its accuracy much strengthened by the change of opinion which afterwards took place with respect to extraction, in the minds of its other two great advocates, Mr. Ware and Professor Richter. Mr. Ware, after witnessing my operation "for solid cataract on young persons," immediately, and exclusively, adopted it for the cure of that disease occurring in children, which class of patients he had previously declined to operate upon, or, when he departed from this prudent course, (if a judgment may be formed from the results of many of his operations in such cases which I have seen,) his success was indeed very precarious. In a publication which he gave to the world shortly after this period, Mr. Ware stated, that he still "pre-" ferred extraction for adults and old persons." His practice, however, proves, that he very soon gave up this preference, for I have seen two gentlemen, more than thirty years of age, on whom he had operated for the absorbent practice, much about this time, and have since seen several old persons, and heard of others, on whom he had tried it, and one of the last

operations he performed in this manner, was on an old lady, seventy years of age, who was subsequently sent to me by that eminent surgeon, Mr. John Pearson, to be operated on, in the other eye.

Professor Richter's change of opinion and practice, after he had became acquainted with the absorbent powers of the humours of the eye, is still more remarkable, and which he communicated to the public, in his Elements of Surgery, with a frankness highly honourable to him, more particularly as having before, (while he advocated extraction,) warmly opposed the opinions and practice of Professor Scarpa. After combating in that work, the objections urged against depression, with similar arguments to those used by Mr. Pott, he concludes with the following remarks, translated by Mr. Samuel Cooper, and inserted in an ingenious treatise upon Cataract, written by that gentleman, who appears well acquainted with the German language, "The principal ad-
"vantages of extraction, consist in its injuring
"none of the more sensible parts of the eye,
"only the insensible cornea, and in its radically
"curing the cataract, that is, taking it entirely

" out of the eye. But it may, with reason, be " objected, that the cure of the cataract, by ex- " traction, ought, on no account, to be called " radical, while the capsule, the seat of the pos- " sible, and, not unfrequently, secondary mem- " branous cataract, remains behind in the eye; " that far more important accidents are to be " dreaded after extraction than couching; opacity " of the cornea; closure of the pupil; prolapsus " of the vitreous humour and iris; and that ex- " traction is much more difficult, and more sub- " ject to consequent inflammation, than depres- " sion*."

Thus, we see the three great advocates of extraction, after having had the most extensive experience of that operation, and after having, in their publications, exerted their utmost efforts to recommend it, appear either wholly, or in a considerable degree, to have given up the opinion they had entertained of its merits, in favour of the use of the needle. The reasons which influenced them, must neces-

* Amfungsgr, der Wundarun, pages 360, 361. See Cooper on the Cataract, pages 57, 58.

sarily have been very powerful; they must not only have been dissatisfied with the general results of the operation, but must also have been convinced, that the "improved methods," (the absorbent practice,) for cataract, promised to be much more successful.

CHAPTER IV.

Sect. III.

Comparative Success of the different Operations for Cataract.

TABLES, illustrative of the different results of the operations of depression and extraction, compared with those of the new and improved series of operations, which have been described and recommended in this work, and which I am now about to submit to my readers, appear to me the most conclusive and unanswerable proofs, that remain to be offered, of the advantages which have been already obtained by the adoption of the latter. As the restoration of sight is the grand object to be attained, it will, I conceive, necessarily follow, that the operation found to succeed in the greatest proportion of cases, will be preferred by the surgeon, and submitted to with the greatest confidence by the patient.

In the year 1752, Daviel published his Method of Extraction. He stated, that at the period of his publication, he had operated upon two hundred and six eyes, and that one hundred and eighty-two were restored to sight; but he neither explained what degree of vision was obtained, or what accidents accompanied or followed his operations. The French Academy of Surgery, desirous of obtaining an authentic statement of the results of this new method, applied to Mr. Caqué, one of their corresponding members, residing at Rheims, where Daviel had operated upon forty-three cases of cataract, in the year 1751. Caqué, in a letter, dated Jan. 25th, 1753, informed them, that he could not give an account of all the patients, several having quitted the town, since they had been operated on, but that he had examined thirty-four of these individuals who were then living at Rheims; seventeen were completely cured, eight saw indifferently, and nine were entirely blind. Even this proportion of success was admitted to be very considerable; nevertheless, judging by this specimen, of Daviel's general success in his two hundred and six cases, the operation can scarcely be said to have suc-

ceeded in more than half, for, among these eight patients, who "saw indifferently," six had "lost the use of the pupil." This must, in all probability, have been complicated with a partial opacity of the capsule; whether that opacity originated in protrusion of the iris, the common consequence of the escape of the vitreous humour, and which, Richter* believes, is always succeeded by secondary cataract, or whether it arose from the capsule contracting an adhesion or concretion to the posterior part of the iris, (as in the instances mentioned by Doctor Young, of Edinburgh,) the opacity, in either case, was very likely to proceed to the complete formation of secondary cataract, and ultimately to the total failure of the operation. The same results usually follow the formation of a staphyloma of such magnitude as to remain for two years, and which, at the period of Mr. Caqué writing his letter to the Academy, had not disappeared in the two other patients who saw indifferently. In these latter cases, the pupil must necessarily

* I have seen it somewhere stated, that Richter had operated successively by extraction upon ten cases, and succeeded in seven of them.

have been much diminished in size, from the protrusion of the iris, which caused the staphyloma.

The following is the result of the experiment which was tried on the invalids in Paris, in 1753, by permission of the Minister at War*, in order to ascertain the comparative success of depression and this new operation of extraction, and which is published in the Memoirs of the Academy of Sciences in France†. Mr. Morand couched six patients: three saw distinctly; in the others the cataract rose again, and the patients continued as blind as before. M. de la Faye performed extraction on six. Two saw distinctly, two obscurely, two remained quite blind. Mr. Poyet extracted the cataract in seven. Two saw distinctly, two less distinctly, one could perceive light‡, and two remained quite blind.

* I find that I laboured under a mistake, when I stated, in the preceding part of this work, that this experiment was tried on the invalid seamen. The Minister of War having given the permission, it must have been the invalid soldiers who were selected for the purpose.

† Mem. de l'Acad. Roy. de Chir. tom. ii.

‡ This the patient must have been capable of doing previous to the operation, so that the failure was in fact as complete as in the last two cases.

Our countryman, Mr. Sharp, in a paper read before the Royal Society in November, 1753, states having by an improved and much more simple mode than that described the preceding year by Daviel, operated on nineteen eyes; "with about half of which he had, what he "thought tolerable success; though he admits "not one escaped a considerable degree of "inflammation*."

M. Lacournère, in an able and ingenious work, published at Strasburgh, in 1803, entitled, "Con-"sidérations sur l'Opération de la Cataract, et "parallèle entre le procédé de Scarpa et celui, "de Wenzel," very warmly advocates extraction, in preference to depression†. He however states his opinion, that "the operation may be con-"sidered as performed with great success, when "it succeeds entirely upon half of the patients "operated on‡."

* Wathen's Dissertation on Cataract, page 66.

† This author, in his zeal to recommend and eulogize extraction, declares it to be one of the most "easy and simple "operations in surgery." This opinion is rather in opposition to that of our eminent countryman, Mr. Sharp, who remarks, "that the difficulty of performing that operation is too great for "it to be generally practised."

‡ En général, on peut regarder l'opération comme pratiquée

Mr. Roux, surgeon of L'Hôpital de la Charité, &c., in Paris, in the presence of a great number of students of surgery, belonging to his class, upon my inquiring what was the average of success in his operations for cataract, informed me, in 1814, that he had operated the preceding year on forty cases by depression, and eighteen by extraction, and had succeeded in one half of each *.

While residing at Bath, about six years ago, a surgeon of great respectability brought his father to me, from a considerable distance, to be operated upon for cataract by the absorbent practice. This, he told me he was induced to do, from having, while a student at the hospitals in London, seen the operation of extraction performed on nine patients in succession, by one of the most eminent surgeons in the metropolis, every one of which entirely failed.

The operation for the extraction of cataract had been performed for nearly twenty years on

très-heureusement lorsqu'elle réussit complètement sur la moitié des malades. Voyez Lacournère, page 99.

* Mr. Roux was in this country about two years ago, and has since published his opinions of the state of surgical science in London, which has been translated into the English language.

the blind pensioners of Greenwich Hospital, previously to my appointment, by the Honourable Board of Directors, to operate upon the accumulated number of cases there, consequent upon the refusal of the men any longer to submit to the operation from the ill success which had attended it. The following is the official report made to the Board on this subject, by the three principal medical officers of that institution, the accuracy of which was ascertained previous to its publication, by a strict personal examination of the patients, by the Directors, who interrogated the men individually, as to their previous, and present state of vision, a special Board having been appointed for the purpose.

RESULT *of the* OPERATION *of* EXTRACTION, *which had been performed on Pensioners, blind of Cataract, now in the Hospital, previously to the employment of* SIR WILLIAM ADAMS.

Eyes destroyed	12
Obliterated pupils	4
Gutta serena and secondary cataract	3
Opaque cornea, and other diseased changes of the eye	4
Successful	1
Total number of eyes, upon which the operation of extraction had been performed	24

In the Thesis, published in Paris, by Doctor Tartra, in the year 1812, and already mentioned, he gives a Table of the result of a number of operations for cataract, performed in the Hôtel-Dieu in Paris, and communicated to him by his colleague, le Docteur Bullier; and he afterwards mentions what appears to be the general success, in Paris, of the operations of

extraction and depression. He says, " Out of " one hundred and thirteen cases of cataract " operated upon in the Hôtel-Dieu, from the " commencement of 1806 to 1810 inclusive, we " find seventy by extraction, and forty-three " by depression*."

* Je vais consigner ici quelques données tirées des observations recueillies a l'Hôtel-Dieu de Paris, qui m'ont été communiquées par mon estimable confrère M. le Docteur Bullier.

Sur 113 observations de cataractes, opérées dépuis le commencement de 1806 jusqu'à 1810 inclusivement, nous trouvons 70 *extractions* et 43 déplacemens.

Results of the Operations of Extraction and Depression, performed at the Hôtel-Dieu at Paris, from the Commencement of 1806 *to* 1810 *inclusive.*

Succès, Successful,	19	Extractions, ... Extract.	24	Déplacements, ... Depression, ...	Total ..	43
Demi-succès, Partial success,	6	Extractions, ... Extract.	4	Déplacements, ... Depression, ...	.....	10
Insuccès absolus, Total failure,	8	Extractions, ... Extract.	5	Déplacements, ... Depression, ...	.....	13
Resultats incertains, ou inconnus, Results uncertain, or unknown,	17	Extractions, ... Extract.	6	Déplacements, ... Depression, ...	.....	23
Inflammations intenses, Intense inflammations,	4	Extractions, ... Extract.	2	Déplacements, ... Depression, ...	.....	6
Paralysie de la retine, Paralysis of the retina,				Déplacements, ... Depression, ...	.....	1
Hernies de l'iris, Hernia of the iris,		Extractions, ... Extract.			.....	3
Non-sorties du cristallin ..... The lens not extracted				Extraction		5
Resserrement, ou dilatation extrême de la pupille .... Contraction, or extreme dilatation of the pupil				Extraction		3
Convexité difforme de la cicatrice de la cornée ..... A deformed convexity of the cicatrix of the cornea				Extraction		1
Adhérence de l'iris a la cornée, vers l'angle externe.... An adhesion of the iris to the cornea at its external angle				Extraction		1
Taie sur la partie inférieure de la cornée ..... Opacity in the lower part of the cornea				Extraction		1
Passage d'une partie du cristallin dans la chambre antérieure de l'œil ..... Part of the crystalline lens passing into the anterior chamber of the eye				Depression		1
Morts* ..... Died*				Extraction		2
					Total	113

* Dont l'un par suite d'une maladie organique simultanée dont le siège étoit dans l'intérieur du ventre.

* One of them, in consequence of a simultaneous organic disease, seated in the interior of the belly.

" By adding, to the forty-three successful cases, " the other ten, where the operation was attended " with partial success, it will be seen, that " nearly half the patients operated upon for " cataract, obtained a greater or lesser degree " of sight. It is thought, that two in five " patients, operated upon for cataract, recover " their sight; and this is pretty nearly the " general result of operations for cataract.

" In the year 1809, sixteen persons afflicted " with cataract, were received into the Hôtel " Dieu at Paris; fifteen were cases of lenticular " cataract, the other was membranous; five " of the former were operated on by extraction; " two of the operations were successful, two " failed; the fifth patient recovered but a very " indistinct degree of vision. One case operated " upon by depression succeeded perfectly. The " nine other cataract patients were not operated " on, either because they were too old, or the " cataracts were not completely formed*."

* " En ajoutant aux quarante-trois succès, les dix demi- " succès, on voit que presque la moitié des sujets opérés de " la cataracte, c'est-à-dire 53 sur 113, ont recouvré la jouissance " plus ou moins parfaite de la vision. En général, on pense

From this last observation, it is probable, that the one hundred and thirteen cases operated upon in the Hôtel-Dieu, and accounted for in the above table, must have been considered as unexceptionable.

The results of the new operations described in this work, are now to be laid before the public, and, which it will be seen, have been very different from the above details given of the operation of extraction. I trust, my readers will be satisfied, that their success, in my hands, has been fully equal to the expectations held out,

" que sur cinq opérés de la cataracte, deux recouvrent la vue;
" et cela est assez d'accord avec ce qu'on observe partout.
" Dans l'année 1809, il est entré à l'Hôtel-Dieu de Paris,
" seize personnes affectées de la cataracte. On en a reconnu
" quinze cristallines, et une membraneuse.
" Des quinze premières, on en a opéré cinq par extraction;
" deux avec succès, deux sans succès. Le cinquième n'a
" recouvré qu'une vision peu distinct. Une cataracte opérée
" par déplacement a très-bien réussi. Les neufs autres cata-
" ractés n'ont point été opérés parce qu'ils étoient trop vieux,
" ou parce que leurs cataractes étoient incomplètes."—*De l'Opération de la Cataracte, A. E. Tartra.* Paris, Janvier, 1812, pp. 83, 84.

in the preceding part of this work. While at Exeter, I confined my practice to effecting absorption of the cataract in all cases, whether soft or hard, whether occurring in young or in old persons. Regardless of the time necessary to effect the solution and absorption of a hard and solid lens, and being then unacquainted with my new method of extraction, I in general preferred to repeat the operation as often as was necessary, in order to accomplish these objects, rather than to incur the dangers attendant on depression and extraction. During that period, I never recollect to have seen an eye lost, where the nucleus of the lens admitted of immediate division, and very few indeed in old persons, although, during nearly two years that I superintended the Eye Infirmary there, I, probably, on an average, in my public and private practice, performed six or eight operations each week, (including repetitions,) so large was the accumulation of cataract cases at that time in the west of England. During my residence at Exeter, I operated in succession on forty persons, without experiencing a single failure, a large majority of whom had cataracts in both eyes.

The following table shews the number and ages of the persons successfully operated upon, in the infirmary, from Nov. 18th, 1808, to Sept. 29th, 1810.

Ages of Persons cured, born blind of Cataracts.	*Ages of Persons cured of Cataracts not born with them.*
1st YEAR.	1st YEAR.
1 Seventeen months old,	1 Eight years old,
5 Between 7 and 10 years,	2 Between 12 and 20,
1 Fifteen,	5 Between 50 and 70,
3 Between 20 and 23,	4 Between 71 and 74,
1 At 30.	1 At 78,
11	1 At 80.
	14

Ages of Persons cured, born blind of Cataracts.	*Ages of Persons cured of Cataracts not born with them.*
2d YEAR.	2d YEAR.
1 Ten months old,	1 At 6 years old,
5 Between 2 and 7 years,	6 Between 12 and 20,
8 Between 7 and 20,	13 Between 20 and 50,
4 Between 20 and 30,	10 Between 50 and 70,
1 At 34.	6 Between 70 and 80.
19	36

RESULT *of the* NEW OPERATIONS *performed on the Pensioners of* GREENWICH HOSPITAL, *by* SIR WILLIAM ADAMS.

CASES *considered unexceptionable.*

NAMES.	Age.	Description of Disease.	Number of Eyes operated upon.	Result of the Operations.	State of Vision.
John Bray	80	Cataract.....	2	Perfect.....	Perfect, being able to see as well as ever with Cataract Spectacles.
Richard Collins ..	63	Do.	2	Do.	Perfect. do. do.
Robert Kinsley ..	70	Do.	2	Do.	Sight returning, when he died from Carbuncle.
Robert Handcock	47	Do.	1	Do.	Perfect, and gone on Out-Pension.
*Jonathan Stratton	75	Do.	1	Do.	Perfect.
Edward Hilback..	40	Do.	1	Do.	Do.
Guy Overton	79	Cataract, with obliterated Pupil	1	Cataract cured, and an Artificial Pupil formed	Do.
Silas Darby.....	66	Cataract.....	1	Perfect.....	Do.
William Russell ..	50	Cataract complicated, with obliterated Pupil, and a defect of the Optic Nerve.....	1	Cataract cured, and an Artificial Pupil formed	Vision nearly, but not quite perfect, owing to the diseased state of the Optic Nerve.
William Roberts..	48	Cataract.....	1	Cataract cured, partial opacity of the Cornea remaining	Vision not perfect, but sufficient for the common purposes of life.
†Thomas Ford....	74	Cataract.....	1	Unsuccessful, but no deformity produced.....	

CASES *considered incurable by other Oculists.*

John Douglas	36	Cataracts with obliterated Pupils	2	Cataracts cured, and Artificial Pupils formed	Perfect.
‡Fred. Hartgill ..	48	Cataracts complicated, with Gutta Serena. Had been blind for nearly twenty years	2	Perfect	Was enabled to read small print with great fluency, till attacked with violent inflammation of the eyes from cold. Is now convalescent.
Thomas Dailey ..	46	Cataract and obliterated Pupil, with Gutta Serena	1	Cataract cured, and an Artificial Pupil formed	Vision useful, and can see small objects.
William Austin ..	31	Do. Do. Do.	1	Ditto	Vision useful, and able to see objects at a considerable distance.
David Hall	52	Cataract and obliterated Pupil	1	Convalescent, when discharged from the Infirmary for incorrigible drunkenness	.....
William Thompson	49	Do. Do. Do.	1	Cataract cured, but Pupil requires further enlargement ..	Vision useful and improving, when he died of Consumption.
§Otter Grindall ..	40	Cataract and Gutta Serena....	1	Perfect	Vision useful, and continues to improve.
Thomas Whiteman	28	Cataracts (adherent), with a defect of the Optic Nerve	2	Ditto	Vision very good, but not perfect.

CASES *which had been operated upon unsuccessfully by other Oculists.*

Edward Turner ..	46	One Cataract adherent, the other detached and floating. Had previously undergone *thirteen* Operations	2	Perfect	Perfect.
‖ John Broadway	51	Cataracts membranous, (or secondary,) and Gutta Serena..	2	Do.	Not improved, Optic Nerve being totally insensible.
‖ John Maddin ..	52	Do. do. with obliterated Pupil.	1	Membranous Cataract removed, and an Artificial Pupil formed	Do.
John Wilkins	52	Cataract secondary, with obliterated Pupil, from the failure of Extraction seven years since	1	The secondary Cataract removed, and an Artificial Pupil formed	Perfect, being able to see the minutest objects.
		Total number of Eyes upon which the new Operations have been performed	31		

(Signed) R. ROBERTSON, *Physician.* B. M'LAUGHLIN, *Surgeon.* M. S. KENT. *Apothecary.*

Dec. 27, 1813.

RECAPITULATION.

Successful termination of the different operations.....	29
Unsuccessful termination	1
Discharged for irregularity	1
Total.....	31

* Jonathan Stratton was attacked, three months after he was cured, with repeated violent inflammation of the Eye, which assumed an intermittent form, and has wholly destroyed Vision.

† The cause of failure in this case has been mentioned, page 88, of this work.

‡ This man's vision fluctuates according to the state of his health, which for many years has been much impaired. After the recovery of his eyes from the attack of inflammation, under which he laboured, when this Report was drawn up, his vision improved considerably, and the last time he was in London, he shewed me a book with a moderate sized type, of which he informed me he had read seventeen pages successively that morning.

§ Otter Grindall is since dead of Apoplexy.

‖ This morbid state of the retina was apprehended previous to the operation, and I assented to the urgent entreaties of the men to make an effort for their relief, only on the condition, that the medical officers of the Hospital would attest to the Directors, the circumstances under which I undertook their cases. The execution of the operations was equally perfect, as in any of those by which sight was restored.

The operations for cataract, performed at the Infirmary, (with the exception of that described in my work on Diseases of the Eye, for the "Hard and Solid Cataract of old Persons,") together with my new Method of Extraction, were all brought to the test of fair experiment, by order of the Board of Directors, at Greenwich Hospital, who, actuated by the humane wish, of affording relief to the great number of blind pensioners in that institution, as well as desirous of ascertaining the comparative success of these different operations, with those in general use, placed the men under my care. After the operations had been performed, and reported on by the medical officers, the Directors personally, and minutely, examined the different cases, and subsequently published the result of this trial of my practice in the annexed Table, together with all the official papers connected with the subject.

Before I conclude, I must beg leave to advert to some observations contained in M. Roux's narrative, already mentioned in a note, page 393. Previously to his criticising some of the new and improved operations, described in my work on Diseases of the Eye, he laments "the fatal pre-"judice of the gentry in this country, in favour "of oculists," and appears to congratulate himself, that "their reign is drawing near its end "in France:" and, that the most delicate, and important operations upon the eye "are now "nearly brought back into the hands of the "general practitioners of surgery;" adding, "Is "it not remarkable that it is not to oculists, but "to surgeons, properly so called, that is to say, "of men exercising all the branches of surgery, "that we owe the most important discoveries, "the best inventions, by which the surgery of the "eyes has been brought to perfection?"

This self-complacent remark involves a question of general speculation, and a question of professional fact. The question of general speculation is,—whether a combination, or a division of labour, be best calculated to give perfection to the art in which it is employed. Now, even if this question

had never been tried by the test of experience, we might still reasonably conclude, that the man who would consent to devote the whole of his skill and attention, to one particular branch of study, would be more likely to acquire dexterity in that single branch, than he who would divide his talents amongst all its multifarious branches, equally. And the conclusion we should thus be led to, by a speculative contemplation of the subject, is confirmed by the concurrent practice of mankind in every line of occupation, and every part of the world in which perfect excellence, has been made an object of pursuit. We see it in the most abstruse sciences, and in the lowest handicraft-trades; among the mechanics at Birmingham and Sheffield, and the prize-students at Oxford and Cambridge. And it forms, in effect, not only the foundation, for that division into distinct branches, by which the HEALING ART is characterized in our own day, but also, the certainty of its continuance.

So much for the soundness of M. Roux's remarks, as involving a question of general speculation. Let us now briefly consider them, in reference to the actual professional fact.

When I was at Paris, in 1814, this gentleman

informed me publicly, that the preceding year he had operated in the *Hôpital de la Charité,* in *eighteen cases* of cataract by extraction, and *forty by depression,* and that he had only succeeded in *half* of them.

In the table, copied from Doctor Tartra's Thesis, page 396, it appears, that, out of *seventy* cases of extraction, in the Hôtel-Dieu at Paris, and *forty-three* of depression, *nineteen* only of the former, and *twenty-four* only of the latter, were perfectly cured, which is little more than *one-third* of the cases operated upon. De Tartra says, by adding to this number, ten other cases, in which the operation was attended with *partial success,* nearly one-half of the patients obtained a greater, or a less degree of vision; and he concludes by observing, that *two out of five, is nearly the average number of patients operated upon for cataract, who are perfectly cured in France.*

Lacournère, another French writer, and a warm, and zealous advocate for the operation of extraction, remarks, " that, in general, the ope-
" ration of extraction may be considered as very
" successfully performed, when the half the pa-
" tients operated upon, are restored to sight."

On the other hand, the younger De Wenzel, in his work on Cataract, makes the following statement:—That, at the request of Morand, his father operated upon *seven* of the invalids by extraction, for the express purpose of comparing the success of his method, with that of another, performed by an eminent operator in Paris, upon an equal number, and that his father "restored them all to "sight," while "neither of the other seven was "restored to sight *."

The question of professional fact, then, without pursuing it farther, completely coincides, in its examination, with that of speculative argument. If Baron Wenzel, as an oculist, extracted the cataract, at Paris, in seven successive instances, without a failure, and the Parisian Surgeons, pursuing Wenzel's mode, obtain success in not more than half the cases that occur to them, neither M. Roux, nor the people of France, have any great cause for congratulation that the reign of the oculists is drawing towards a close; nor any great foundation for asserting, that general practitioners "have "been chiefly instrumental in bringing ophthalmic "surgery to its present improved state." The ad-

* See Wenzel on Cataract, page 43.

vantage of a division of labour, is here as conspicuous as every where else; and the claims of superior dexterity, and delicacy of hand, must remain with the man, who confines himself to ophthalmic operations alone.

A want of this delicacy of hand, has been, I conceive, one of the principal causes of the general ill-success which has accompanied Cheselden's operation for forming an artificial pupil; in which, if the pressure of the edge of the instrument against the iris, should (speaking somewhat loosely) exceed the weight of a drachm, it will, in many instances, cause the separation of that membrane from the ciliary ligament, and thereby occasion a total failure. How then, may I ask, is it possible, for any hand, to accommodate itself to such a nicety of pressure, immediately after the use of an amputating knife, or the employment of the forceps used in the operation of lithotomy? Indeed, it was lately admitted by one of the most eminent surgeons in this, or probably any other metropolis, that the requisite endowments of hand, which are force and boldness, in general surgery, and those of lightness and delicacy, which are necessary for the finer

operations upon the eye, are so incompatible, that the practice of both, by the same individual, tends to spoil the perfection of either; diminishing equally the masterly freedom requisite in the first, and the precision of touch as necessary in the second*.

But while I contend, that the *operative part* of ophthalmic surgery, and the general practice of the surgeon, should be kept separate, I am, and always have been, strongly impressed with the opinion, that it would in the highest degree conduce to public benefit, that every medical practitioner should possess a competent knowledge of diseases of the eye, and their proper treatment; an opinion I have, for the last five years, invariably urged, in my communications with his Royal Highness the Commander-in-Chief, and the Adjutant-General, on the subject of the Egyptian ophthalmia.

With respect to the word *oculist*, as used by

* In illustration of the above argument, I shall state, that Messrs. Savigny inform me, they employ one man exclusively for setting surgical instruments, and that experience has taught them, that the early part of the day, is the only time that he is able to succeed in setting the finer instruments used in operations on the eye, as, if he attempts it, after being employed on those used in general surgery, his hand is found spoiled for the minuter instruments, during that day.

M. Roux, there may be something ambiguous in the expression to the general reader.---He seems to be desirous of conveying an idea that the oculist of the present day is on a precise footing with those of former times. It is however to be remembered, that a total change has been effected in this, and many other branches connected with medicine and surgery, within a few years. Would M. Roux place the ophthalmic surgeon of the present day, who, after having received a liberal education, both general and professional, is induced, by the expectation of attaining a degree of eminence in that particular branch, to abandon the practice of general surgery, and confine his attention to ophthalmic diseases,—would he place him upon a level with the ignorant itinerants of former times? or deny (upon any basis of sound reasoning) that he is not entitled to a superior confidence in that branch, to which he has devoted extraordinary attention? Would M. Roux assign to such a man as the late Mr. Saunders no higher a professional rank and respectability, than to the late Chevalier Taylor? Or would he presume to draw any comparison between their professional attainments?

It was but six or seven years before his death,

that Mr. Saunders had confined his practice to diseases of the eye and ear; and I will submit it to the candour of my professional readers, whether any man whatever, "exercising all the branches of "surgery" has in an equal degree, contributed to improve the science of ophthalmic surgery?

Having entered so far upon the subject, I will also add farther, that there are certain advantages derived from nature, indispensably requisite to constitute a good operator on diseases of the eye, which no study can acquire, no art can imitate, and which, when possessed, will naturally incline a surgeon to the line of practice, to which he knows they are precisely suited. I mean a perfect self-command, great force and accuracy of eye, and a natural steadiness of hand, and delicacy of touch; the latter of which, we have already observed, must be lessened by the practice of general surgery, and, it is well known, is not possessed, by some of the most eminent surgeons of the present day, in a sufficient degree, to ensure general success in operations on the eye.

It only remains for me to add, that it has been my invariable rule, since the death of Mr. Saun-

ders, wherever I have been called upon to operate, to invite the most respectable practitioners to witness the different performances, and to mark the progress of the operations which are described in this, as well as my other work on Diseases of the Eye. The knowledge therefore of their general success is by no means confined to myself. I have hereby endeavoured, equally to discharge my duty as a member of a liberal profession, and to avail myself of the remarks, and reply to the questions of those who have attended me. I have had the satisfaction of learning, that the operations described in my work on Diseases of the Eye, have been approved and exclusively recommended, in the lectures of some of the most eminent teachers of surgery in this metropolis, and that they have been considered in the same favourable point of view on different parts of the continent*. And should they be found,

* A report on the above work on Diseases of the Eye, drawn up by Doctors Magendie and Blainville, and read before the *Société Philomatique* of Paris, May 28, 1814, speaks in warm commendation of the operations there described: and it was in consequence of this approbation, that the Society did me the honour to elect me one of their corresponding members. The same operations have been regarded in an equally favourable

together with the new operation of extraction described in the present publication, (as I trust

point of view at Vienna, and have in like manner acquired for me the honour of being elected a corresponding member of the *Academié Josephine*.

From a correspondence with Professor Himley, of Göttingen, I have had the satisfaction of learning that my work has obtained the approbation of that distinguished professional character. And in another correspondence with Professor Maunoir, of Geneva, he appears to have relinquished his indiscriminate preference for the operation of extraction, as contained in his letter to Professor Scarpa; and says, he has successfully adopted the operation I have recommended, in cases of cataract, both for children and adults.

Even Professor Scarpa, in a new edition of his work on Diseases of the Eye, just published, has found it necessary, after the perusal of my work, to correct some of those hasty and erroneous opinions, which he had formerly given of my operations; founded on the partial extract, translated by Professor Maunoir, which he acknowledges to have misled him on some material points.

I mention these facts to prove that Mr. Roux has promulgated his own feelings and wishes, rather than the sentiments of the professional, or scientific community, in the confident hope which he appears to entertain, of a downfall of the "reign of "oculists," and the beneficial return of their branch of operative surgery, into the hands of the general practitioner.

If the general practitioner of surgery in France, would competently qualify himself in the knowledge and treatment of diseases of the eye, and leave the operative part of ophthalmic surgery, to those, who, after receiving a good general and professional education, confine their practice to this particular branch of the art, it would conduce far more to the in-

they will,) equally successful in the hands of others as in my own, it will afford me the highest and most gratifying recompense I can ever receive, for the mental labour and anxiety

terests of society, (to which all selfish considerations ought to give way,) than if Mr. Roux's visionary predictions were to be realized; and it would, probably, then be no longer considered as "*great* success," that *half* the operations performed for cataract in that country should terminate favourably.

The nature and character of the Egyptian ophthalmia being then understood, we should not, as is now the case, hear the received opinions of its contagious powers doubted, or made a subject for ridicule: and, possibly, we should no longer hear Mr. Roux himself, denying in positive terms, the existence of this disease in the French army, or among the general population of France.

The concurring experience, and unanimous testimony of the whole British faculty, have fully established the contagious property of the Egyptian ophthalmia; and with all due submission to Mr. Roux's opinion upon the subject, I can positively affirm its *existence in France;* having as well as other English Surgeons, seen cases of the disease in the *Hôpital de la Charité*, and in several hospitals in Paris. At the Hôpital des Invalides, I pointed out one of its stages, existing in an invalid, to Baron Percy, and to the surgeon of that establishment. In the School for the Instruction of Blind Children, I saw it in a lad, who assured me, that, when he lost his sight, a similar kind of inflammation, with which he had been attacked, prevailed very extensively in his neighbourhood. To which I may add, that one of our own army surgeons has since informed me, that he had seen a great number of *French soldiers* infected with the same complaint.

I have undergone, in endeavouring, at least, to give them a perfection, which has never hitherto been attained; and which may consequently entitle them to the sanction of the profession, and the general support of the public.

THE END.

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ERRATA.

Page	Line			
3	9	*for*	seventeeth	*read* seventeenth.
	21	*for*	substanoe	*read* substance.
6	20	*for*	Paracentesis	*read* Paracenthesis.
12	18	*for*	revivor	*read* reviver.
13	19	*for*	Hyloidea	*read* Hyaloidea.
55 note	6	*for*	broken	*read* punctured.
	7	*for*	had disappeared	*read* been observed to disappear.
63	19	*for*	restoraion	*read* restoration.
66		*for*	operation for depression	*read* operation of depression.
85	15	*for*	When I pursued that	*read* When I pursued the operation.
86	20	*for*	ciliar processes	*read* ciliary processes.
90	19	*for*	cataracts	*read* cataract.
117	17	*for*	potesit	*read* potest.
125	3	*for*	ower	*read* lower.
151	22	*for*	opaque capsule	*read* the opaque capsule.
209	22	*for*	when there is no difficulty	*read* there is no difficulty.
252	4	*for*	vitreous	*read* aqueous.
265	4	*for*	too	*read* too much.
266	10	*for*	avoided	*read* obviated.
284	20	*for*	across it	*read* across that cavity.
302	2	*for*	specific gravity	*read* greater specific gravity.
312	25	*for*	of	*read* from.
329	20	*for*	cataracts	*read* cases.
332	5	*for*	of of	*read* of.
344	20	*for*	of	*read* for.
367	11	*for*	for	*read* of.
385	7	*for*	had became	*read* became.
395	19	*for*	Bullier	*read* Rullier.
396	note.	*for*	Bullier	*read* Rullier.
403	6	*for*	would	*read* should.

A

LETTER

TO THE

RIGHT HONOURABLE AND HONOURABLE

THE

DIRECTORS OF GREENWICH HOSPITAL,

CONTAINING

AN EXPOSURE OF THE MEASURES RESORTED TO,

BY

The Medical Officers of the London Eye Infirmary,

FOR THE PURPOSE OF

Retarding the Adoption, and Execution of Plans

FOR

THE EXTERMINATION

OF THE

EGYPTIAN OPHTHALMIA,

FROM

THE ARMY, AND FROM THE KINGDOM

SUBMITTED

FOR THE APPROVAL OF GOVERNMENT,

BY SIR WILLIAM ADAMS.

London:

PUBLISHED BY BALDWIN, CRADOCK, AND JOY, PATERNOSTER-ROW; AND J. HATCHARD, PICCADILLY; ALSO BY W. BLACKWOOD, EDINBURGH; AND HODGES AND M'ARTHUR, DUBLIN.

1817.

TO

THE HONOURABLE THE DIRECTORS

OF

GREENWICH HOSPITAL.

My Lords and Gentlemen,

It is one of the most painful circumstances of life, when a man who is conscious that he has endeavoured to govern his whole conduct, moral and professional, by the most undeviating rules of honour and integrity, feels himself called upon to repel attacks that have been made upon both. Hitherto, I have in silence borne accumulated injuries; but there is a point beyond which, forbearance becomes criminal. I shall at length defend myself.

It is a duty I owe to you, who have been pleased so publicly to express your entire approbation of my conduct, to prove that I am not unworthy of that approbation. It is a duty I owe to myself, to resist the calumny which from so many quarters, with a kind of incorporated strength, assails me; and, though last, not least, it becomes me to yield to the urgent recommendation of friends, who have known me well, and known me long, to dismiss (and they are convinced I have it in my power) the various stigmas which are attempted to be fixed upon my moral and professional character.

Many of them think I have delayed that too long, which I do reluctantly at last. I had flattered my-

self, that attacks which are not founded in truth must die away; and that falsehood would grow weary of its efforts; but envy and jealousy, particularly when involved with the more sordid interests, seldom, I fear, cease, till they have effected the ruin of their object, or till they have roused the power they strive to overthrow, into an exertion that at length crushes themselves. Those falsehoods should, indeed, have been strangled in their birth, and I ought to blame myself for having permitted them to grow into the importance which they assume; but I yielded my indignant feelings to the judgment of a much-esteemed friend, whose advice, on all former occasions, experience had taught me to respect.

I have now however found, and I ought to have known it before, that we live in a world which is the daily dupe of its own credulity, where persevering falsehood is too often taken for truth, whose garb it assumes; but I trust that the following pages will expose the disgraceful and violent deviations from it, of which I charge those who have accused me. I may appear to be bold in my pretensions; but I have no other courage than that which conscious rectitude inspires, nor any confidence, but in the superior arms I possess to encounter my enemies.

Their charges against me have been disseminated every where, and by every means; but their refutation is at hand; I only ask the calm and candid attention of those who know me, and who have heard of them. I am well assured, my Lords and Gentlemen, that such attention I shall receive from you; but I claim it as a *right*, from those whose minds have been poisoned by the publications of my adversaries, to read this letter.

dead of his fame,—and the living of their reward ; of using the most unreserved means to advance my private interests ;—of assuming professional merit and peculiar modes of practice to myself, which I had borrowed from others ;—of making a boast of inventions as of the first importance, whose actual use is comparatively trivial ;—and of keeping such experience as I might have acquired secret, with the low, interested zeal of an empiric, for my own individual application, contrary to every feeling of humanity, and the liberal spirit of a liberal profession. Nay, my Lords and Gentlemen, your honourable protection of me, and your public approbation of those services which you especially called me to perform, have involved even you in that censure, which, in such various shapes, and from such various directions, has fallen upon myself.

The success of my new and improved operations for cataract in curing the pensioners of your Hospital, (corroborated as it was by official papers,) was the *remote cause*, and my subsequent proposal to eradicate the ophthalmia from the army was the *immediate cause*, which called forth that Report from the London Infirmary for Diseases of the Eye, wherein you were treated with the disrespect, which can meet only a contemptuous indifference from you, but has been in the greatest degree injurious to me ; and therefore merits that exposure to which the following pages are dedicated.

The purport and character of that publication I should treat with the open severity which it deserves, were it not for the respect due to those gentlemen who formed the Committee on the occasion, and who must have been induced, by the misrepresenta-

tions of their medical officers, to become ostensible parties, and to give the sanction of their respectable names to that injurious act. They owe me no common reparation for the injury which they have inconsiderately, but most unwarrantably, done me, by pronouncing thus decidedly upon a subject of which they could not be competent judges, and I doubt not I shall receive from them hereafter, that justice, which, as gentlemen and men of honour, they must perceive that they are bound to give me.

It was my wish to compress the following Narrative of facts into a smaller compass; but it is an essential object that my defence should be complete; and that object could not be attained but from a succession and variety of documentary proofs, which should establish, by the most unquestionable evidence, the degrading nature and character of those hostilities which are so actively and systematically carried on against me,—the artifices with which they have been practised,—and the combinations with which they have been supported. I have, however, no doubt of the conviction which must follow an unbiassed perusal of these pages. They will, I am confident, fulfil their object, by proving, that clamour is not reason,—that assertion is not fact,—and that accusation is not guilt.

My acquaintance with the late Mr. Saunders commenced in his professional attendance on me when a boy at school, during a severe illness. He was then apprentice with the late Mr. Hill, an eminent practitioner of medicine and surgery at Barnstaple, in Devonshire.

Some years after I also became the apprentice of Mr. Hill, and, as Mr. Saunders had done, remained with him five years. On my arrival in London, to complete my professional education at St. Thomas's and Guy's hospitals, I found Mr. Saunders the anatomical demonstrator at the former. At the expiration of the first year of my studies, he invited me to witness his practice at the London Dispensary, over which he presided, for the treatment of diseases of the eye and ear; where I made myself so useful to him, that, in a short time, he almost wholly confided the management of the ear cases to my care; and, when circumstances obliged him to be absent from town, those of the eye also. From the commencement of my attendance on his dispensary in May, 1807, to August, 1808, when I quitted London, (with one exception of several weeks that I was confined to my room by the Egyptian ophthalmia*, and was subsequently obliged to go to the country for the re-establishment of my health, which had been seriously injured by the necessary treatment during that confinement,) I not only assisted him in all his operations, both public and private, but subjected a large portion of that time, which would otherwise have been devoted to my studies at the above hospitals, to comply with his wishes, and to promote his accommodation.

The kindness of unreserved instruction on the part of Mr. Saunders, and the most grateful attentions and acknowledgments on mine, produced that intimate and cordial friendship between us, which, with the interval only of a few days, continued to the end of his valuable life. That interval, which was the cause of

* I caught this ophthalmia, from accidentally touching my own eye with an instrument, which I had employed in examining a patient infected at the dispensary with that dreadful disorder.

equal astonishment and mortification to me, and which his subsequent conviction rendered so short, arose from his easy, amiable, and unsuspecting nature, which suffered his mind to be poisoned with suspicions by the arts of those, who misemployed his confidence in them, to exert their malignant jealousy against me.

On the establishment of the West of England Eye Infirmary at Exeter, which was the earliest scene of my practice, Mr. Saunders, so far from considering it as a rival institution, (as others have since done,) gave it the sanction of his name, by becoming its consulting oculist; nor, in the performance of my duties there or elsewhere, did any person ever hear me mention his name, but in terms of gratitude for his disinterested friendship, in affording me the almost exclusive participation of that extensive experience which he possessed, and to which I am, and ever shall consider myself, so much indebted.

In the commencement of my practice, I had no other mode to follow but that which my master had taught me. This I strictly adhered to, till imperious circumstances induced me, though with respectful diffidence, to deviate from it. One of my first deviations was in the treatment of the morbid effects produced by the Egyptian ophthalmia, in the membrane lining the inner surface of the eye-lids. Some time previous to my leaving Mr. Saunders, I had witnessed two cases of this kind, but have only a distinct recollection of one of them. It was that of Mr. Fidkins, linen-draper, Hanway-passage, Oxford-street. The inner membrane of the eye-lids was granulated, and very much inflamed, but his sight was at that time perfect, there being no films as yet formed, which, when the granu-

lations are permitted to remain, frequently result from the continued friction of this rough surface of the lids upon the transparent cornea, thereby causing blindness. The practice of Mr. Saunders was to snip off the eminences with a pair of curved scissors, and frequently to inject upon the raw surfaces a strong solution of lunar caustic. The inflammation and pain excited by this treatment were extreme, and the patient rarely recovered from the most acute sufferings under twenty-four hours. As this application was repeated every three or four weeks, and even oftener when the eyes would admit of it, the extraordinary patience, resolution, and fortitude which Mr. Fidkins displayed, were absolutely necessary, to secure the benefit which he ultimately received.

The following letter fully explains his situation :—

Hanway Street, Oxford Street, February 4, 1815.

DEAR SIR,

About eight years since I was afflicted with a most violent inflammation in my eyes, and for two years and a half experienced but very little relief, though I consulted the most eminent gentlemen of the faculty; at last was recommended to Mr. Saunders, who cut off a number of little warts from the inside of my eyelids, and afterwards injected upon the sore places a strong solution of caustic, which gave me the most excruciating torture for at least twenty-four hours after each operation. This was repeated as often as the state of the eye would admit of it, for it frequently brought on an ulcer, as Mr. Saunders called it, which laid me up at least for a month at a time. I underwent the syringing at least ten times before the right eye was cured. The left eye was cured in the course of two months, but the other took twelve months before it was well. Nobody can imagine the extreme misery the syringing always put me to, and I believe he could hardly persuade any one else to undergo so many operations but myself. He twice opened, and afterwards divided, the arteries of my temples, in order to stop the inflammation. Nothing but the extreme anxiety to get my eyes well would have induced me to submit to the agony I experienced, which was beyond all description.

I shall always revere the name of that good and clever man, whose soothing attention and kindness I remember with the greatest gratitude, and by whose skill now I bless God, I enjoy as good sight as I ever I did, although it is proper for me to state, that *my sight before I went to him was not hurt, the disor-*

der being confined to the lids; and it was only while the ulcers lasted that my vision was injured, which returned when the ulcers were cured *.

I am, dear Sir,

Your obedient humble Servant,

THOMAS FIDKINS.

SIR WILLIAM ADAMS,
26, Albemarle-street.

I, however, in my first trials of the practice established by Mr. Saunders, did not meet with patients who possessed the fortitude of Mr. Fidkins. They were blind ophthalmia pensioners from the army, and I could not prevail on them to submit a second time to this very painful operation. They did not hesitate to declare that they would prefer blindness, through the remainder of their lives, to the endurance of those sufferings which were necessary to their cure†. The reso-

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* I request the particular attention of my readers to the *purport* of this passage, as upon it rests a very material argument. I shall have frequent occasion to refer to it.

† The injection of the solution of lunar caustic, even when the eye is free of inflammation, is attended with very severe pain, and sometimes accompanied with prejudicial effects to vision, an instance of which is detailed in the following letter, received within these few days:

SIR,

In obedience to your wishes, I beg to state the treatment I underwent before I became your patient. I was advised by an eminent surgeon, (Mr. Travers) to have a solution of caustic injected upon my eyes for films, which was repeated twenty times. The pain produced by the syringing was so dreadfully ACUTE as to bring on severe head-achs, to which I had never been before subject. Instead of removing, it produced blindness in one eye, with which I could see before this dreadful application was applied. The vision of the other eye also was injured by the same cause; my head-achs, under your treatment, are within a week relieved, and I find my sight considerably improved.

The extreme pain lasted for two or three hours, during which I could do nothing, and it afterwards gradually subsided. The inflammation and heat produced by the caustic was most extremely violent, even after the original inflammation, for which I applied to the surgeon in question, had been removed. The films upon the eye, for which, together with the inflammation, I applied, were in no degree lessened, on the contrary, my friends who frequently examined my eyes, thought them increased by the syringing.

I am, Sir, yours respectfully,

Oldford, Borough, 8d June, 1817. GEORGE COOPER.

lute determination of these men, necessarily compelled me to turn my thoughts to the discovery of some less painful, and more expeditious mode of treatment. After the unsatisfactory trials of two substitutes for Mr. Saunders's practice, one of which I previously submitted to his approbation, it fortunately occurred to me, that with a very small, sharp-cutting scalpel, I might be able, at once, to remove the whole of the granulated and thickened membrane, and to prevent its regrowth by astringent applications. The result surpassed my most sanguine expectations; I usually found, that by one operation, and in the course of a month or six weeks, I was enabled, without any acute suffering to the patient, to perform a radical cure, in cases where the disease existed in a much greater degree, than in the instance of Mr. Fidkins.

Among my first successful cases of Egyptian ophthalmia was John Frost, a native of Exeter, who had been dismissed from the army as incurable, after having become blind in both eyes, in which state he had remained on a pension of upwards of 22*l.* per annum. This man not only laboured under a state of granulated eye-lids, tenfold more diseased than the patient of Mr. Saunders already mentioned; but he was also afflicted with opacities of the cornea, in so dense and extensive a degree, that he was incapable of seeing any object whatever, and was led about the streets by a guide. I had, therefore, in his case, a most difficult treatment to accomplish. First, to remove the granulations of the lids. Secondly, the opacities of the cornea, which latter symptom, (occasioning blindness), it will be seen by referring to Mr. Fidkins's letter, did not exist in his case, unless when produced by the violent action of the caustic. After Frost's sight was restored

to *its natural state*, he applied to Mr. Russell, Treasurer of the West of England Eye Infirmary, to obtain the situation of a clerk, for which he was well qualified.

The following letter, with which Mr. Russell has favoured me, will explain the nature of this application; the circumstances of which, from their extraordinary character, he was induced at the time particularly to note down. This letter I insert, because a most invidious interpretation has been given to a correspondence between Mr. Saunders and myself, that arose out of Frost's case; and I conceive that Mr. Russell's testimony, if I had no other documents, would be fully sufficient to clear me from the malignant charge, of having acted towards Mr. Saunders in any other manner, than was consistent with the most perfect honour, delicacy, and friendship.

Exeter, January 5th, 1815.

DEAR SIR,

Agreeably to your request, I now send you an account of the circumstances respecting John Frost, whom you cured, after he had been discharged from the army, on a pension of upwards of 20*l.* a year, blind from the ophthalmia.—The accuracy of the facts stated in this letter, I am willing to attest on oath, if required to do so.—In the beginning of 1809 I received a letter, signed J. L. Frost, offering his services as a clerk; but, not knowing the writer, I shewed the letter to you, and inquired if you thought it was written by the same person who had been discharged from the army, in consequence of the ophthalmia; and since led blind about the streets of Exeter, but whom report had stated you had recently cured. You replied it was, and that he was then capable of acting as clerk to any one. Having observed, in the newspapers, that a great number of young men had from time to time been discharged from the army, from the consequences of ophthalmia, and understanding that Government were most anxious to obtain a cure for the disease, I observed his case should be made known to the Commander-in-Chief. Considering no time should be lost, I waited on Major-General Thewles, (the then Commanding Officer of the Western District,) to whom I gave Frost's letter, mentioning what I had heard concerning him, and intimating if it were not desirable to examine the writer as to the facts. To this General Thewles fully assented, and agreed to attend the Exeter Infirmary the next admission day, which he accordingly did, with Colonel Head, of the 13th Dragoons, some more of the officers of that regiment, then quartered at Exeter, together with the surgeon belonging to it. They examined several pensioned

soldiers under your treatment for the ophthalmia, but particularly Frost, from whom they heard related the circumstances of his discharge and subsequent cure, who also read and wrote before them. General Thewles expressed himself to me, when alone, in the highest degree satisfied with the proofs of your success, and urged the propriety of immediately communicating what he had seen to the Commander-in-Chief, as the ophthalmia then existed to such an extent throughout the army. On my informing you this, and intimating what I thought the best mode of proceeding, *you positively declined making any communication to the Commander-in-Chief, without first consulting your best friend, Mr. Saunders, who had first pointed out to you the seat and nature of the disease.* I then urged you to write to that gentleman without delay, which you did, and handed me his answer, wherein he disapproved of the intended communication, at which I own I was astonished. *You then said, the business must drop, as you would rather lose the chance of gaining* 5000*l. than do any thing which Mr. Saunders might consider as ungrateful towards him, from whom you had received so much professional information.*

I perfectly recollect lamenting to you, that so fatal a disease as the ophthalmia should be suffered to go on in so great a degree unchecked in the army, because an individual thought it his interest to keep the mode of cure a secret for the time being.

If any censure has at this distant period fallen upon you for acting according to my suggestions and advice to you on that occasion, I am sorry for it. Nothing can be more evident, from the statement of facts which I have just made, than that I was warranted in acting as I did on the score of humanity, and as being an officer of a charity in which these important cures had been effected.

With respect to yourself, I can solemnly aver, that your conduct (as far as it has come within my knowledge) has been honourable and grateful to your deceased preceptor, and that you have uniformly attributed the merit of the discovery in question to him. At the same time, I cannot close my letter, without venturing an opinion, that no *disinterested* person can read the facts on each side without acknowledging that a great degree of credit is due to you, not only for your improvements on the late Mr. Saunders's discoveries, but for your indefatigable and *gratuitous* exertions, in so widely extending the benefits resulting from them to society. Believe me to be,

Dear Sir, very truly your's,

ROBERT RUSSELL,

Treasurer to the Exeter Eye Infirmary.

This letter requires no comments; it speaks for itself.

In compliance with Mr. Russell's suggestions, I did not delay in dispatching a letter to Mr. Saunders, after it had been favoured with the entire approbation of Mr. Johnston, an intimate friend of Mr. Saunders,

and who had been introduced to me by a letter from that Gentleman a few days only previous to the commencement of this correspondence. After stating, in this letter, the circumstances as related by Mr. Russell, I proceeded in the following manner:—

Feeling how much I am indebted to you for the professional information, which I possess, I leave the business wholly to you. Write to me, and say how I am to act; in whose name it is to be brought forward; and in what manner," &c.

In the answer which I received from Mr. Saunders, I was equally surprised and mortified on observing the following passage:—

Your views can only be the enhancement of your own professional character, whilst mine you neglect, even when your notions originated from the observations made on the case of Mr. Fidkins.

To this most unwarranted and unjustifiable remark, (for in such terms the duty I owe to myself obliges me to describe it,) I transmitted the following answer by the return of the post:—

I declare, most solemnly, I never had an idea of assuming to myself any further credit than having improved the method of treating the disease. What I meant by asking whether it should appear in your name or mine was, whether you had any strong cases to recommend the practice, or whether you could bring it before the Commander-in-Chief officially? No case can be stronger than one of mine the General saw (Frost's case), as he had been inspected by, at least, thirty Staff Surgeons, and, I believe, even by the Director-General; none of whom had the least idea of the complaint.

I also added,

That General Thewles, over and over again, assured me that any improvement of practice would be instantly attended to, and the inventor liberally rewarded, if the plan was to prove extensively useful. He also thought it probable that Government would establish hospitals, and call in all the pensioners to be examined by us. Do not therefore miss an opportunity so favourable as the present. I will act for you as for myself. I will get him to forward any proposition you would wish me, and entirely keep myself in the back ground. If my plan of treatment on trial should be found useful, *do with it what you please, and consider it as your own.* I again declare, sacredly, that I should ever think myself ungrateful and dishonourable, had I acted otherwise than I have done,—namely, asking, and being guided by, your wishes.

Feeling most acutely the unkind and unjust suspicions of my conduct, as expressed by Mr. Saunders in his letter to me, and in the hope of banishing them from his mind, I requested his friend Mr. Johnston to give him an *explanation of the circumstances*, with the whole of which he was acquainted; and by whose advice, together with that of Mr. Russell, I had been entirely regulated. Accordingly, Mr. Johnston wrote to Mr. Saunders as follows:—

I regret to find that our friend Mr. Adams is somewhat uneasy, owing to a late correspondence which he has had with you relative to the Egyptian ophthalmia. Lest you should be led to view his conduct in any other than its true light, he has desired me to write you a statement of the circumstances connected with this affair, so far as they fell under my cognizance; and this I am the better qualified to do, as he made me *a principal party in his councils.*

After stating the representations contained in Mr. Russell's letter, he proceeds:—

This gave Mr. Adams an opportunity of explaining to General T'ewles the relation in which he stood towards you; and it was under these circumstances that Mr. Adams wrote to ask your advice as to the line of conduct which it would be proper for him to pursue.

For further particulars of this correspondence, I refer my readers to the special report of the London Eye Infirmary, from which the above extracts have been taken*.

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* In the special report of the London Eye Infirmary, in which this correspondence is published, the medical officers of that establishment have thought proper to represent Mr. Johnston as the friend of *Mr. Adams*, instead of *Mr. Saunders*. The only apparent object of stating that gentleman to be *my friend*, on the acquaintance of only a few days, was to give effect to the following unauthorized sentence in his letter to Mr. Saunders, with which I was wholly unacquainted until I read it in the above Report, Mr. Johnston having sent off his letter without shewing it to me, or informing me of its contents. "Mr. Adams seems "to feel very sensibly that he has been wanting in delicacy towards you on "the late occasion; and this has, in the present instance, induced me to become "his apologist. I hope he will never again put himself in a situation to require "one."

I had no other unpleasant feelings on the occasion, but such as arose from the inconsiderate misconception which Mr. Saunders had been induced to en-

These epistolary extracts readily account for the transient duration of that ill-founded resentment, which had, I doubt not, been artfully instilled into the bosom of Mr. Saunders, naturally the seat of every kind and honourable sentiment. When I disclaimed the idea of anticipating him in the communications of his practice, he did me the justice to believe me; and our correspondence immediately resumed its former tone and character, and continued to the close of his valuable life. About a fortnight previous to his death he executed a commission for me with all his accustomed kindness; and Mr. Milford, of Exeter, who saw him only a few days before he died, assured me, that he retained his regard for me to the last. In a letter from that Gentleman, dated Brighton, Jan. 16, 1815, is the following very pleasing communication:—

It happens to have come within my own knowledge, that the late Mr. Saunders thought well of you to the last period of his life. A few weeks, or rather I incline to think only a few days*, before his decease (by which professional science sustained so severe a loss), I had a pretty long conversation with him at his house in Ely-place. He spoke of you with *much respect*, and seemed sincerely to rejoice at your professional success, as well as that of our West of England Eye Infir-

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tertain of my conduct. I was not conscious, either on the score of honour or friendship, that the formality of apology was necessary from myself, and therefore could not wish Mr. Johnston to play the proxy on the occasion; and could I have possibly foreseen his design of apologizing, instead of merely giving the explanation as I desired, I should have seriously interposed to prevent its execution. My acquaintance with Mr. Johnston, which had been of so short a date, was in consequence of the following passage, in a letter which he brought me from Mr. Saunders:—"If you have regard for me, shew it by your attention and "kindness to the bearer."

How far Mr. Johnston merited the zealous and friendly services, which, it is well known to all my Exeter friends, he afterwards received from me, I shall leave it to others to determine from this act. If he thought my first letter to Mr. Saunders required an "apology," why did he permit me to send it? He acknowledges that he was a "principal party in my counsels;" and, by my letter of explanation to Mr. Saunders, it appears he actually read the letter, for which he here makes an unauthorized and unnecessary apology.

*This conversation took place only three days before the death of Mr. Saunders.

mary, of which you were then the oculist. I mentioned the warm regard you felt for him, and the obligation you uniformly acknowledged yourself to be under to him, for your acquaintance with the diseases of the eye, and the novel modes of curing them. *At this he seemed much pleased.*

Mr. Saunders died in the beginning of February, 1810. About this time the Egyptian ophthalmia raging in a still greater degree in the army than it had hitherto done, and having also attacked more than a thousand children in the Military Asylum, Sir David Dundas, the then Commander-in-Chief, appointed a Committee, composed of the subjoined eminent professional Gentlemen* "to take into consideration "the prevalence of the purulent (Egyptian) ophthal- "mia in the army, and to determine the best means "of prevention and modes of cure."

The feelings of respectful deference to the wishes of Mr. Saunders, which deterred me from taking those steps, during his life-time, which had been so strongly pressed upon me by Mr. Russell and General Thewles, were removed by his death, and I did not hesitate to obey the former suggestions of these Gentlemen, to make the Commander-in-Chief acquainted with my success in the treatment of the *third* or granular stage of the ophthalmia. I accordingly had the honour of being presented to the Adjutant-General by the Bishop of Exeter, who, being one of the first benevolent patrons and supporters of the West of England Eye Infirmary, was

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* NAMES of the GENTLEMEN composing the OPHTHALMIA COMMITTEE.

Sir Lucas Pepys, Bart., President.
Sir Henry Halford, Bart.
Doctor Baillie,
Doctor (now Sir Gilbert Blane, Bart.)
Doctor Mosely.
Everard Home, Esq. (now Sir Everard, Bart.)
Thomas Keate, Esq.
Francis Knight, Esq.
Henry Cline, Esq.
James Ware, Esq.
J. W. Phipps, Esq. (now Sir Jonathan Wallar, Bart.

fully acquainted with my successful practice.—The result of this interview was the express desire of the Adjutant-General, that I should address an official letter to him on the subject, the following copy of which I have recently obtained from the Adjutant-General's office:—

March 1, 1810.

SIR,

After the most attentive perusal of the Report the Adjutant-General did me the honour to enclose, I beg leave to observe, that the particular form of the ophthalmia, to which, from its very destructive nature, I am anxious to call your attention, is not therein even alluded to. It is an effect very generally produced when the disease is not cured during its acute stage; and which a very large portion of those men dismissed the service, labour under. Within these few months from *fifteen* to *twenty* of such persons I have perfectly cured, by pursuing a mode of operation *first suggested by my late friend and preceptor, Mr. Saunders, and since improved by myself*, without meeting a single instance of failure. I have taken the liberty of enclosing the particulars of one of three very bad cases of this kind, which was drawn up by the patient himself, at the suggestion of General Thewles, Colonel Head, of the 13th light dragoons, and several other officers of that regiment, who inspected him and his fellow-sufferers at the West of England Eye Infirmary, at Exeter, an institution of which I have the sole surgical management. These gentlemen considered a knowledge of the practice would be of such great importance and benefit to the service, that they repeatedly urged me to allow General Thewles (the then Commander of the Western District) to forward the enclosed case with other proofs of my success in an official form to you. This, however, peculiar circumstances induced me then to decline.

In thus voluntarily coming forward, I must beg to state, that the only motives, by which I am actuated, are, in the first place, a desire of communicating highly useful information, AND SECONDLY AN EARNEST WISH TO BENEFIT THE WIDOW OF MY MUCH ESTEEMED FRIEND. *In this I hope to succeed, should I be granted the opportunity of proving the utility* OF HIS DISCOVERY, *of which I am the only one of his pupils who can speak from practical experience.*

During the interview which the Adjutant-General honoured me with two days since, I proposed to him, that a certain number of men, afflicted with this stage of the ophthalmia at the York Hospital, whose names were noted to be dismissed, should be sent down to Exeter, in order that I might have the opportunity of demonstrating, beyond the possibility of doubt, the validity of my pretensions. This he was pleased highly to approve, but I have since learnt, from the assistant surgeon of that establishment, that most of the ophthalmia patients in that hospital have been discharged as incurable. It has recently happened, that from the 9th regiment of light dragoons, now quartered at Exeter, ten men (comrades of Frost, whose memorial I herewith send) have been discharged as no longer fit for service, in the same state of disease as that which he laboured under when he first applied to me—eight of whom, I am fully convinced, admitted of being cured by the same means as were employed upon him.

I therefore, Sir, with great confidence, venture to assert, if all the ophthalmic pensioners in the United Kingdom were called in, and those selected for treatment whose cases admit of being cured, that an immense expense would be saved to the Government, which is now paid to them in pensions, besides restoring to the service a very considerable number of ready-disciplined soldiers,—a measure which humanity as well as policy seems strongly to recommend.

I have the honour to be,

SIR,

With the highest respect,

Your obedient humble servant,

W. ADAMS.

To Sir David Dundas,

&c. &c. &c.

I left town for Exeter, where I then resided, shortly after writing the above letter. My proposition was not carried into effect; and I had no intention of renewing the subject, until, on my coming to settle in London the following year, I was professionally consulted by a near relation of the Adjutant-General, to whom I mentioned, in conversation, the circumstances of my introduction to that officer; adding, that my continued, and almost uniform success, in the treatment of the third, or granular stage of the Egyptian ophthalmia, had, in the fullest degree, confirmed my confidence in its general efficacy. This conversation was repeated to the Adjutant-General; and by his especial invitation (conveyed to me by my patient) I called on him at the Horse-Guards; when I repeated my former proposal, that a limited number of soldiers, who were blind from this disease, should be placed under my care, in order that I might prove the efficacy of my practice.

I then received from him the strongest assurances, of the great importance attached by His Royal Highness the Commander-in-Chief, to the obtaining a certain, and generally successful mode of cure for the

Egyptian ophthalmia; and that *I should experience the utmost liberality, from the department which is more immediately responsible for the health of the army.* I am induced particularly to notice these facts, because my proposal, in regard to the cure of the ophthalmia in the army, has been represented as an act of obtrusive, and indelicate interference on my part, with the official duties of this department.

In obeying the invitation of the Adjutant-General, which was unexpected and unsought-for by me, and in my respectful compliance with the wishes of His Royal Highness the Commander-in-Chief thus conveyed to me, I considered that I should do humanity a kindness, and the state a service. I then, as now, offered my professional services, and experience, to government gratuitously, without any selfish regard to my private interest; and I had not at that time the remotest idea, that in doing so, I should offer violence to the feelings of that department, whose wishes, as I was assured by the Adjutant-General, were in perfect unison with those of the Commander-in-Chief. I was strongly impressed with the opinion, that I was not offensively interfering with the province of another department, from the appointment but a short time previously, of the Ophthalmia-Committee already noticed, for the express purpose of taking into consideration the prevalence of the Egyptian ophthalmia in the army, and to determine the "best means of prevention and methods of cure;" and also, from my having been informed by a surgeon, who had the charge of a depôt for French prisoners, that in the anxiety of Government to obtain information, they had officially sent to these depôts to ascertain, if the French surgeons

were better informed upon the subject than our own.

I was fully aware, that the particular form of the disease, the third, or granular state, *which is the main and chief cause of the extensive propagation of the ophthalmia*, was but very little known; and after the most attentive perusal of the Report made by the Committee, and enclosed to me by the Adjutant-General, I found, not merely that there was no plan recommended for its treatment, but that it was wholly unnoticed, and not even alluded to, in the very document which, by a General Order from the then Commander-in-Chief, was "circulated for the information of the "commanding officers of regiments, and *for the guidance of all medical officers belonging to the army.*"

This was the form of disease which I undertook to cure, and by which the further propagation of the Egyptian ophthalmia could alone be arrested.

I also knew, from extensive practical experience, that numbers of those unfortunate individuals, who had been dismissed the army with pensions, totally blind, and considered incurable by the medical department of the army—a burden to themselves—an expense to the nation—and who were extensively propagating their dreadful disorder among the general population of the country,—that these men could, by the mode of practice which I had matured, be again rendered either fit for military duty, or made useful members of society.

These were the circumstances—these were the motives—which induced me to come forward, when officially invited and encouraged to do so.

But could I have anticipated the numerous unex-

pected obstacles, which during the last five years, have been opposed to the humane wishes of the Commander-in-Chief, the difficulties I have had to encounter, and the calumnies to which I have in consequence been exposed,—I have no hesitation in declaring, that I would at once have respectfully declined, undertaking to prove, by actual experiment, the utility of my practice, for the benefit of the army.

Having, however, as already stated, received the assurances I did from the Adjutant-General, I was thereby induced to lay open my practice to the late Director-General, and a number of army-surgeons, at York Hospital, Chelsea, the establishment in which I first undertook the treatment of a number of blind men, labouring under the third stage of the disease. I demonstrated to them its nature and seat, by everting the eye-lids of some of the infected patients. I operated in their presence, and allowed patterns to be taken, by the surgeons' instrument-maker of the army, of the instruments which they saw me employ, having lent mine to the surgeon of York Hospital, who applied to me for that purpose; while the after-treatment in every respect, by order of the late Director-General of the Army, was daily recorded on the books of the hospital, by the assistant-surgeon appointed to superintend my patients. Notwithstanding all this, and although my practice and my instruments were immediately adopted in the general practice of the army, by the order of the late Director-General, (as, I was informed by the Gentleman who officially transmitted these orders to the different ophthalmia depôts,) such a continued, and apparently organized opposition was instituted, to the orders given by the Commander-in-Chief, that a fair opportunity should be afforded me, to

prove the efficacy of my practice, that nothing but a determination not to be beaten down by a spirit of unfairness, and illiberality, could have induced me to submit to the numerous and continual vexations, which I have since experienced.

Having undertaken what I considered an important duty, from the benefits which I was practically convinced, would result from the adoption of my practice, I felt it concerned my reputation as a surgeon, and my character as a man, to persist in proving the truth of what I had advanced, in defiance of the discouraging circumstances which opposed my progress. They were such, that two years passed away in accomplishing two separate trials of my practice on different sets of patients; in neither of which having received the justice, due to me, I proposed to the Adjutant-General, (whose uniformly kind, and honourable conduct, alone enabled me to contend in any degree, with the various impediments thrown in my way,) that a *third* trial should be instituted, on the express condition, however, that it should be wholly independent of the army Medical Board, and that the decision upon the benefits to be derived from my practice should, after the result of the trial, be left either to the College of Physicians, or of Surgeons, or to any fixed number of eminent professional gentlemen in the metropolis.

Sir Henry Halford, Doctor Baillie, Sir Everard Home, Mr. Cline, Mr. Ashley Cooper, and Mr. Abernethy, were named, by His Royal Highness the Commander-in-Chief, to form a Committee for the purpose of "taking into consideration my claims to a new and successful treatment for the Egyptian Ophthal-

mia." Eight blind Chelsea pensioners, all of whom had been dismissed the service as incurable, from Egyptian ophthalmia, (some of them for six and eight years,) were selected as subjects for this trial of my practice.

At the first meeting of the Committee, I presented to the gentlemen who composed it, an Essay, containing a description of my practice for the treatment of this disease, in *all its stages*. The Introduction contains the following passage :—

For the first explanation of the nature of the latter or *third* stage of the Egyptian ophthalmia, I am indebted to my lamented friend, Mr. Saunders ; but I have been obliged to abandon his mode of treating it, and to substitute another of my own. I believe, however, that he rarely, if ever, succeeded in removing the opacities of the cornea, for which opacities the pensioners are dismissed the service, as those, and not the granulations of the lids, are the cause of blindness. In fact, there is no allusion even, made to this symptom of the disease in his posthumous work, though the granular state of the lids which occasions these opacities is described, and a mode for its removal mentioned.

This trial of my practice was crowned with complete success. Before, however, the Committee had given in their opinions, I sent a letter to Mr. Abernethy, and another to Sir Henry Halford, the first dated December 5, the other December 6, 1814, which were read also by every member of the Committee. In the letter to Mr. Abernethy is the following passage :—

" A short time before I quitted the tuition of Mr. Saunders in 1807, he saw two cases of the granulations of the lids, and treated both with the curved scissors, and syringed the granulations every three or four days with a solution of nitrate of silver. I have since learned from one of the patients, Mr. Fidkins, linen-draper, Hanway-passage, Oxford-street, that, under this treatment, it was *twelve months* before he was cured, although the disease in the lids was extremely slight, when compared with that which existed in the men whom you this day saw. On my settling in Exeter soon after I left Mr. Saunders, (which was six months before Mr. Fidkins was cured,) I found a number of soldiers there blind from the Egyptian ophthalmia, when I tried Mr. Saunders's practice ; but it was so *painful*, *slow*, and *inefficient*, that I endeavoured to substitute some other mode of treatment, by which these objections might be avoided. After various unsuccessful trials, I hit upon the mode of slicing off the thickened conjunctiva, in the manner you have seen me carry into effect, by which I can cure this

symptom of the disorder, in its worst state, in five or six weeks, which, by Mr. Saunders's mode, he was unable to accomplish in less than twelve months. A still more important fact remains to be pointed out,—That when I left Mr. Saunders, he had not removed opacities of the cornea, produced by the friction of the granulations of the lids, Mr. Fidkins being free from that symptom.

In my letter to Sir Henry Halford, I stated—

The only notice taken of this important stage of the ophthalmia, in the posthumous work of Mr. Saunders, is in a note, page 94, where it is particularly observed that "he preferred the scissors to the knife; and that he prevented the subsequent growth of the conjunctiva, by injecting a solution of alum, or nitrate of silver." The solution of alum was suggested to him by me, in preference to the nitrate of silver, as being far more efficacious in preventing the re-growth of the granulations, and infinitely less painful to the patient. In many cases the conjunctiva is merely villous, though very much thickened and inflamed. The scissors can then be of no use, as they cannot cut a surface which is nearly smooth. On the contrary, whether the conjunctiva is diseased in a greater or less degree, with a knife peculiarly constructed for that purpose, I can always slice the whole of it off, and lay the tarsus bare. The re-growth may always be prevented by a strong solution of alum, or the application of the sulphas cupri, which, by guarding the cornea with lint dipped in aqua calcis, to decompose the sulphas cupri before it can reach that transparent tunic, it may be used with the greatest safety, and is a powerful and admirable remedy. By these means I can do more in six weeks, than Mr. Saunders did in twelve months, in one of the only two cases under his care while I was with him. In slight cases of diseased lids, such as that of Fidkins, I find the sulphate of copper sufficient to remove it, without the performance of any surgical operation whatever.

"*For the method of curing opacities of the cornea, without which the removal of the granulations, produced by the roughness of the conjunctiva, can be of no advantage to the sight of the patient, I deny having received any information from Mr. Saunders, or any other person.*

"*The question then for the consideration of the Committee, appears to me to be this:—Whether the method pursued by Mr. Saunders, or that which I have invented, is best adapted to the practice of the army?*"

I had thus done every possible justice to Mr. Saunders, from whom I first learned the treatment of the granulations of the lids. I fully and candidly stated his practice, with the reasons which compelled me to abandon it. I openly, but by no means presumptuously, claimed an improvement upon his mode of curing the granu-

lations of the lids, and also *originality* in the removal of the opacities of the cornea, the cause of blindness, and of the consequent discharge of those patients, for whose relief I brought my practice before the notice of the Commander-in-Chief; and ultimately submitted to the Committee for their decision, " *which of the two* " *modes of practice was best adapted for the army.*"

The object of Government, unquestionably, was to possess a certain mode of cure for the form of disease in question. I, was the first person to prove by actual experiment, that it did admit of being cured. In a practical point of view then, the Government is wholly indebted to me, and in no degree to Mr. Saunders, or his successors, for the information they were so anxious to procure, for he died without making his practice known to the Government, or permitting me to do so; and his successors never dreamt of interfering in the subject, notwithstanding the Ophthalmia prevailed so extensively in the army until at the expiration of more than five years after the death of Mr. Saunders, they learned that my practice had proved successful, and that the ophthalmic Committee had given favourable opinions of it.

The gratitude of the legislature and indeed that of mankind at large, to Doctor Jenner has not been lessened, neither the just tribute of applause due to him as a benefactor to the human race been denied, because the effects of the cow-pox were known previously to his having introduced it to public notice, and into extensive practical utility.

Even he, however, had to encounter the hostile opposition of jealous competitors.

The following opinions given by the Committee

were separately transmitted to his Royal Highness the Commander-in-Chief; copies of which, by his order, were afterwards officially conveyed to me.

Copies of the Reports of the Committee appointed by His Royal Highness the Commander-in-Chief, to investigate my Practice for the Cure of the Egyptian Ophthalmia.

(COPY.)

I AM of opinion that Sir William Adams deserves great credit for his treatment of the Egyptian ophthalmia, (as it is called), in the third and last stage of the disease.

Of the ten patients whom H. R. H. the Commander-in-Chief was pleased to order the Committee to observe, whilst they were under Sir William's management, two were dismissed from ill conduct; the others have all appeared to me, on a very careful examination, to be materially benefitted by the operation which Sir William Adams has performed upon them. From a state of darkness and helplessness, they have been restored to considerable comfort to themselves, and to a degree of usefulness to society—but not as soldiers.

I have not seen Sir William Adams's practice on the first and second stages of the disease.

In the 2d, I understand that Sir William uses the treatment, which is generally adopted by the profession*. In the *earliest* attacks of the disease, that he pushes a principle already very well known, to a much greater extent than it has been carried by surgeons and physicians before†, and I should think it probable

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* In the treatment of the second, or ulcerative stage of the ophthalmia, my practice differs materially from that of every other practitioner, with which I am acquainted. It especially differs from that, recommended by the Committee appointed by the Commander-in-Chief, in 1810, (of which Sir Henry was a member,) to decide on the best mode of treatment, "for the guidance of all medical officers belonging to the army," as will be seen by referring to the Report itself at the end of this Letter.

† This principle, as far as I am informed, has never before been applied to the cure of the Egyptian ophthalmia. No author, who has written upon this disease, has to the best of my knowledge recommended its adoption, it being *quite opposite* to that recommended by Mr. Saunders, to which it is the most nearly allied, as will be hereafter shewn, which difference I most particularly pointed out in a letter to Sir Henry Halford, dated Dec. 8th, 1814, (two days anterior to the signature of the above opinion), from which the following extract is taken:—

"From the length of time (more than twelve months) since the gentlemen of the Committee read my Essay on Ophthalmia, and my constantly finding the *emetic* practice mistaken for the *neauseating*, I am rather fearful that the distinction be-

that this may be with a proportionately good success, but I do not know it from my own observation.

I give Sir William Adams credit, therefore, but not the merit of *originality**, for, in the last stage, his practice is an improvement, only in the operation suggested, and performed with success, by the late Mr. Saunders.

(Signed) HENRY HALFORD.

Dec. 10th, 1814.

(COPY.)

On considering the cases which were submitted by Sir William Adams to my examination as one of the Committee, I think that he has the merit of introducing a practice, which is likely to be highly useful, in a particular chronic state of ophthalmia.

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tween the two principles may not be sufficiently taken into account, I shall therefore take the liberty of again pointing them out.—

You well know, Sir, that nothing can be more *opposite* than the immediate effects upon the constitution of *neausea* and "*violent vomiting*," which *latter* effect I consider *indispensably necessary* to the cure of the first stage of the ophthalmia; the *first* being a *sedative*, if I may so term it, on arterial action, by diminishing its force and frequency; while the other, during the immediate act of vomiting, is one of the most *violent stimulants* to the circulation with which we are acquainted, propelling the blood (even the red particles) with such velocity into the most minute order of vessels, as frequently to occasion their over-distention and rupture.

The difference in the doses of the emetic tartar necessary to produce the two actions (*neausea* and "*violent vomiting*") are as great as the effects of the two modes of treatment on the disease. While *neausea* is kept up by one-fourth or one-third of a grain for a dose, the acute inflammation is lessened in proportion to the diminution of arterial action, but as soon as the remedy is left off, this effect ceases, and the circulation with the attendant inflammation returns nearly to their former state. On the contrary, the *violent vomiting* which I recommend, requires, at the first dose, *two grains* of emetic tartar, and to repeat one-half that quantity every half hour, until full vomiting is produced, which is to be kept up for *eight* or *ten hours* at short intervals, by giving the same quantity at larger intervals. By this means, the disease is *entirely stopped in ten or twelve hours*, leaving the eye and its appendages *wholly free from any morbid change*; whereas, after blood-letting, and the other modes of treatment, have been carried to the utmost extent, the disease, though it may be thereby rendered more mild, will still run its course, and leave the *conjunctiva much diseased, giving rise to frequent relapses*, and the *further propagation of contagion*. In *every instance* where it has been adopted by my direction, this practice has proved completely successful. From various quarters I have learnt that other practitioners have been equally successful as myself."

* The words employed in the official letter of the Adjutant-General to me were "new and successful." I never claimed originality in removing the gratulations of the lids.

The state to which I allude is, where the inflammation of the eye, and attending opacity of the cornea, are chiefly kept up by friction of the granulated rough surface of that portion of the tunica conjunctiva which lines the two eye-lids.

As the late Mr. Saunders proposed to accomplish the same object, viz., the removal of this rough granulated surface, by scissors, and actually performed this operation in two cases, the invention of Sir William Adams cannot be said to be quite original. His mode of operating, however, by a knife of his own invention, promises to be much *more efficient*, and to be *more expeditious** in accomplishing the cure than that of Mr. Saunders, and likely to preserve the eyes of many individuals, which otherwise would have been lost.

I consider it as my duty to give my opinion with respect to that class of cases only which I have seen, and therefore shall make no reference to Sir William Adams treatment of ophthalmia in its earliest stage†.

(Signed) M. BAILLIE.

London, Dec. 8th, 1814.

(COPY.)

Sackville-Street, Dec. 7th, 1814.

THE only part of Sir William Adams's practice upon the patients submitted to the inspection of the Committee, which appears to me deserving of commendation, is the free removal of the granulated surface formed on the inner membrane of the eye-lids.

The cornea in seven of these men has by this means been rendered less opaque than when the patients were first submitted to Sir William's care‡.

The white part of the eye, in all the patients, has a number of vessels upon it carrying red blood; and while, that is the case, the men can only be reported better, but not cured; nor are they fit for any kind of military duty§.

(Signed) EVERARD HOME.

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* These were almost the very words which I employed in my letters to Sir Henry Halford and Mr. Abernethy, when claiming a superiority over Mr. Saunders's practice.

† In a previous conversation with Doctor Baillie respecting the different action of neausea, and full vomiting upon the circulation, he fully admitted that the two modes of practice were entirely different.

‡ The cornea in all the eyes upon which my practice was reported, were so entirely opaque when the patients were first placed under my care, that they were unable to see sufficiently to walk without a guide, some of whom had been in that state for *six* and *eight* years: while five of the men read parts of a newspaper with the *most perfect fluency* to the Committee, on the day of examination, and two could read large print.

§ Six of these men were a few months afterwards found fit for military duty, and accordingly did duty in veteran battallions.

(COPY.)

I AM of opinion that the explanation given by Sir William Adams, of the mode in which blindness is produced in the purulent ophthalmia, is correct, viz., that the continued friction of the granulations of the conjunctiva upon the cornea produces vascularities and opacities of the latter, from which blindness ensues.

That, by removing these granulations, the cause of continued friction and contortion is taken away, relapses are prevented, and the total eradication of the disease is produced.

To effect this purpose, the knife appears to be the preferable instrument*, as it completely removes the whole of the diseased part, and produces the most expeditious, as well as the most perfect cure.

I am further of opinion, that as the vascularity and opacity of the cornea appear to be the most difficult part of the treatment, and the immediate cause of blindness, much danger may be avoided, and time saved, if the granulations are removed as soon as the acute inflammation has subsided, before the opacity has yet appeared †.

(Signed) ASHLEY COOPER.

London, Dec. 13th, 1814.

(COPY.)

ON the 14th February, 1814, I inspected the eyes of ten patients, selected by Sir William Adams. The eyes were inflamed, the conjunctiva granular and the cornea so opaque as to render vision nearly useless.

On the 6th December, eight of these ten patients were produced; one having absconded, and another discharged for disorderly conduct.

Of the eight remaining, five could read a moderate-sized print‡, and two more had recovered sufficiently to distinguish large objects. One had received no benefit.

The successful treatment of these cases appears to have principally depended on the removal of the granular projections of the conjunctiva by excision,—a practice which originated from the late Mr. Saunders, Surgeon to the London Infirmary, for curing diseases of the eye.

(Signed) HENRY CLINE.

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* It will be recollected, that I employ the knife as an improvement upon the scissors, which Mr. Saunders used.

† Mr. Cooper is the only member of the Committee who gives any opinion of the opacities of the cornea, except Sir Everard Home; although this part of the treatment is entirely my own, and without which the removal of the granulations *after the opacities are formed*, is of no use, as the patient would remain nearly in the same state of blindness as before.

‡ The smallest type in a newspaper.

(COPY.)

To the Gentlemen of the Committee appointed to examine the Merits of Sir William Adams's Treatment of the Third Stage of a violent and purulent Form of Ophthalmia, commonly called Egyptian Ophthalmia.

GENTLEMEN,

It seems to me very probable, that the granulated, or carunculated state which the tunica conjunctiva lining the eye-lids acquires in this form of the disease, may prove a cause of its protracted and chronic type; and thus tend materially to produce or increase the opacity of the transparent part of the eye.

Sir William Adams candidly acknowledges, that he derived both his opinions and the principle of his practice from Mr. Saunders; and from strongly perceiving the necessity of smoothing the inner surface of the eye-lids, he was led to undertake more bold and decisive measures for this purpose than would in general have been adopted.

The depletion of the blood-vessels (in consequence of his practice) in the first instance, with the subsequent tonic plan of treatment, (both of which are conformable to the general principles of surgery,) appear to me to have restored an useful degree of sight to several patients, whose cases would, in general, have been considered desperate.

I am therefore of opinion, that the practice pursued by Sir William Adams in the third stage of these cases of ophthalmia, is meritorious, and deserving, in general, of a fair and prudent trial.

I have, &c.

6th Dec. 1814. (Signed) JOHN ABERNETHY.

Mr. Abernethy begs leave to add, that he would certainly have attended the Committee this day (as he was told it was important) had not Sir William Adams brought the patients to him yesterday morning, and had he not also believed that he should save time to the Committee by thus delivering his sentiments.

The above opinions *fully established* that I had done Mr. Saunders *every justice* which the *strictest honour* and *integrity* could dictate, and that I had invited the Committee to decide which of the two modes of treatment, his or my own, was best suited to the practice of the army. Four of the six gentlemen determined that *mine was the superior practice*, notwithstanding the removal of the opacities of the cornea, (without which, as already stated, the cure of the granulations is of little or no benefit to vision,) were

not considered or reported upon. As to the implied or expressed opinions, that their removal depends upon the cure of the granulations, it is *wholly inaccurate;* for, in cases where the granulations have been entirely removed for four or five years, and where the requisite means to remove the opacities have been unemployed or neglected, these have remained, occasioning the patient's blindness, nearly in as great a degree, as before the removal of the granulations.

It is well known, that all pensioners dismissed from the service *were blind*, and consequently must have had opacities of the cornea. Now, as Mr. Saunders's practice was *confined to the removal of the granulations*, it could have been of very little service to the pensioners, for whose benefit mine was brought forward; as it is shewn, (by the testimony of Mr. Fidkins,) that Mr. Saunders candidly acknowledged to him, that the violent action of the solution of caustic which he employed *actually produced* ulcers, and consequent opacity of the cornea, instead of removing them. On the contrary, I succeeded in curing *seven* out of *eight* of the pensioners, some blind from opacities *several years*, as will be seen by the following report, descriptive of the state of the men's eyes and vision when placed under my care, and subsequently when they were finally examined by the Committee, to be reported upon.

REPORT.

The state of the Eyes, blind from Ophthalmia, when the Patients were first placed under my care.	The present state of the Patients' Eyes.
CORPORAL HILL, aged 35, was attacked with ophthalmia in 1807, and discharged the service blind in both eyes in 1808. I cured one eye two years since, with which he sees perfectly. In the other the granulations were very large and numerous; the cornea very opaque, and full of large vessels running over it. VISION.—Could see light from darkness, but no object, however large.	The granulations are quite removed, and the natural transparency of both eyes restored. VISION.—Can see to read with the most perfect fluency, the smallest print of a newspaper.
JOHN SCATTENBURGH, aged 27, was attacked with ophthalmia in 1810, and discharged the service blind in both eyes in 1813. The eyes much inflamed. The lids also much inflamed and granulated. Cornea completely opaque, with very large vessels running over them. An extreme bad case. VISION.—Could walk no where without being led, and was unable even to distinguish a man, from a woman.	All inflammation perfectly removed, also the granulations, and the opacity of the cornea in one eye. In the other a little film remains, but it does not much impede the passage of light, being on one side of the pupil. VISION.—Is able to see the second-marks on a watch dial, and read a newspaper.
JOSEPH SPARROW, aged 28, was attacked in Egypt in 1801, and discharged the service in 1810, blind of one eye, which was also inflamed. Lids highly granulated. Cornea opaque, with largevessels running over it. VISION.—Could see the outlines of an object very indistinctly, but without knowing what it was. Did not see sufficiently to guide himself with this eye in walking.	Inflammation perfectly removed, as also all disease of the lids. A very slight cloudiness remains, which is daily getting better*. The enlarged vessels have wholly disappeared. VISION.—Can read the smallest print of a newspaper with fluency, and perceive the seconds'-marks on a watch-dial.

* The health of the patients was much injured by the unhealthy and confined situation in which they were lodged, which very much affected the improving state of their eyes, after remedying this unpleasant consequence by a change of

The state of the Eyes, blind from Ophthalmia, when the Patients were first placed under my care.	The present state of the Patients' Eyes.
GEORGE BIRD, aged 40, was attacked in Egypt in 1801, and had repeated relapses until the year 1809, when he was discharged, blind in both eyes. Both lower lids everted. Lids granulated and inflamed. Cornea opaque with large vessels running over it. VISION.—For nine months in the year he was so blind as to be led about the streets. During the summer, mild weather enabled his eyes to recover from inflammation, when he could see a little better.	Both eyelids cured of eversion. The lids cured, and the transparency of one eye perfectly restored. In the other, there is a cicatrix or scar, which exists on one side of the pupil. VISION.—Is able to read the smallest print of a newspaper with fluency, and to perceive the second-marks on a watch-dial.
JOHN FREESTONE, aged 37, was attacked in 1809, and discharged blind in both eyes in 1810. Lids inflamed and granulated. Cornea opaque, with vascularity. A cicatrix existed in one cornea, as apprehended, from the use of caustic. VISION.—By day he could avoid running against people in the streets, but at night was led every where. He could not at any time see the ground on which he stood, or discriminate any object sufficiently distinct, to know what it was.	All inflammation and disease of the lids removed. The scar necessarily remains, and a very slight haziness in the other eye, which is supposed to be the effect of the caustic which had been employed while he was in the army. VISION.—Can read the smallest print of a newspaper, and perceives the second-marks on a watch dial.

situation, their eyes again became irritated and weakened from the violent purgative effects of some bad Cascarilla bark, which was sent from the Army Medical Board for their use; on which subject I reported officially to that Board, and sent samples of the bark for their inspection. The men had not entirely recovered from the effects of this bark, when they were finally reported upon by the Ophthalmic Committee, Dec. 6, 1814. I then stated to the Committee these circumstances, and requested, if they were not perfectly satisfied with my success, they would give me further time, as the men's eyes were now improving equally with their health. Had any red vessels been observable, more than *what are common to the organ*, which, however, by their Reports, were not perceived by any of the gentlemen but Sir Everard Home, the above circumtances would have sufficiently accounted for them.

The state of the Eyes, blind from Ophthalmia, when the Patients were first placed under my care.	The present state of the Patients' Eyes.
GEORGE BICKLEY, aged 52, was attacked in 1812, and discharged blind in both eyes.—In one eye, there was a scar before the pupil, which eye was rejected as incurable.—In the other, he was affected like the other patients. VISION.—Was able to walk without a guide, but not to distinguish any small object.	All inflammation removed from the eye and lids. The scar in the eye most afflicted lessened. While under treatment was attacked with the Walcheren fever, from which, violent inflammation, and an ulcer of the cornea ensued. I was fearful he would have lost the eye altogether. VISION.—Both eyes much improved. With the eye which ulcerated, can see moderate-sized print, and the second-marks on a watch-dial.
JOHN SMITH, aged 40, was attacked in 1810, and discharged in 1812. Was operated upon four or five times in the York Hospital, after I had demonstrated my practice there, but with no benefit.—His eyes were diseased like the others, only worse; and, having caught cold after he came under my care they remained violently inflamed for upwards of six weeks. VISION.—Having been previously under my treatment for some time, he was able to see to walk without a guide, but not to perceive one person from another, or any small object.	He has suffered very much in his health: first, by the unhealthiness of the former lodgings; and secondly, from being severely purged for six or eight weeks, by the bad cascarilla bark, and from the effects of which he has not long recovered. His eyes much benefited, but are not yet well. They are daily getting better. VISION.—Can see large letters, and tell the hour by a watch.

JOHN MILLER. Is not benefitted in consequence of having been dreadfully purged for eight weeks by some of the same bark, from which Smith and three or four of the others also suffered severely. During this period I operated upon one eye, which is entirely lost, I fear, by the violent inflammation and fungus which resulted. His treatment was, in every respect, the same as the others who are cured; hence the failure must be attributed to the effects of this medicine, and the constitution of the patient, and not to any fault in the practice.

These men were immediately discharged, after their final inspection by the Committee, on the 5th Decem-

ber, without any further treatment; and some months afterwards were examined, (by a military officer appointed by Government), in common with the other Chelsea pensioners, at the renewal of the war, which was terminated at Waterloo, when *six* out of the *eight* were found fit for military duty, and were accordingly sent to different veteran battalions, in which they served; until, by virtue of a promise made them by the Commander-in-Chief, when they were first placed under my care, that they should not be again called upon to do military duty, they obtained their discharge from the army.

It is proved, by *the correspondence published in the Special Report of the London Eye Infirmary*, that Mr. Saunders would not himself bring forward his practice for the cure of the ophthalmia, and that my attention to his feelings prevented me from communicating my own to the Government in 1809. The disease, therefore, I may venture to assert, (experience having fully shewn the granulations to be the cause of the frequent relapses, and of the keeping alive and propagating its contagious principle,) was in consequence permitted to proceed, and to propagate its contagion so extensively as to render it necessary for Government, in 1810, to take the steps already mentioned, to endeavour to check its alarming prevalence in the army.

In 1812, (after Mr. Saunders's death,) I was the first person who demonstrated, and proved the general existence of this peculiar form of the disease, to the late Director General and his colleagues, at the Army Medical Board, and subsequently to the medical officers of York Hospital, Chelsea; who did not hesitate fully and candidly to acknowledge, that they had not been previously aware of the cause of the disease.

John Parsons, Joseph Winter, John Capel, and *David Grey*, were four soldiers on whom the second trial of my practice was made.

John Parsons was attacked with ophthalmia, in camp near Badajoz, in June, 1811, and, after the detention of a fortnight, was sent, blind, to the Francisco Hospital, at Lisbon. He there underwent repeated bleedings and blisterings during two months, without any benefit; was afterwards sent to the Isle of Wight, and from thence to the York Hospital, Chelsea. He remained at the latter hospital for twelve months in the same state, when I selected him, an extreme bad case, for the trial of my practice. Various modes of treatment had been resorted to in this man's case since the first attack, but to no purpose; as he could scarcely distinguish light from darkness, and was unable to perceive the largest objects, or to go without a guide, when I first operated upon him. In April, 1812, he experienced some benefit from my operations, but, having discontinued my attendance at the York Hospital he grew worse. In December, he again became my patient, nearly as blind as ever, scarcely able to see the light of a window. Two months after I operated upon him, he saw with one eye sufficiently to walk without a guide, and the other has since improved, so as nearly to equal the first in power of vision. During the last three months he has distinguished letters, the minute marks on a watch dial, with great clearness, and he walks every where, without the least difficulty, by himself.

His eye-lids never had been properly examined in the manner I examined them; as he declared the surgeons had "never turned up (everted) before," and had always stated that he never could be cured.

Joseph Winter was attacked with ophthalmia at Gibraltar, in December, 1807, and was kept in the military hospital there for several months; as he was not relieved by any of the various expedients resorted to, he was sent home to the Ophthalmic Depôt, at Bognor, where he remained three years and five months, without any benefit from the treatment he underwent, which was directed and witnessed by Dr. Vetch, who never examined the interior of the upper eye-lids, until his return from the York Hospital, in March, 1812, where he had been to see my new operations*. When he operated upon Joseph Winter and several other men in my way, but quite differently from what he had ever done before. From this treatment, however, Winter received no advantage, for he was as blind when I selected him for the trial of my practice as he had ever been. For six months after the first attack at Gibraltar, he had been unable to bear the light without great pain; when the inflammation subsided, he could not see the nails on his fingers, or walk without a guide. He remained in this state until eight or ten weeks after I first operated on his eye-lids, when he could perceive large letters. His sight improved daily, and in the beginning of May, 1813 (five months after my first operation) his eyes were cured, he could read print smaller than that of a newspaper, see the minute marks on a watch-dial, and thread a small needle †.

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* I saw Doctor Vetch at the York Hospital at that period, during the *first* trial of my practice, which was made in that establishment.

† This man then made a pair of shoes for one of my servants, and has continued to work at his trade ever since.

In the case of *John Capel*, the right eye was attacked with ophthalmia in Spain, in November, 1809, on the retreat with Sir John Moore. On his arrival in England he could merely distinguish light from darkness. He was afterwards sent to Walcheren, and from thence to the Bognor Ophthalmic Depôt, where he became blind in the left eye. After various treatment under Dr. Vetch, he was told his case was hopeless, was sent to the incurable ward, and remained there two years, when I selected him for my practice. At the expiration of a fortnight, after I had operated on his right eye, he could read print, and thread a middle-sized needle. His sight gradually improved. He could distinguish the minute and second marks on a watch-dial, and his eye became clear from the application he used. His left eye was irreparably gone; I therefore did not make any attempt to cure it.

David Grey was the fourth patient on whom this trial was made.

The following is the Copy of a Report of this man's case, which, with those of the other three patients, was compared with the state of the men's eyes, and capability of vision, and ascertained to be correct, by the *five* medical officers of Greenwich Hospital, viz. the physician, surgeon, apothecary, assistant-surgeon, and assistant-apothecary, Jan. 10th, 1814. I requested their examination of the patients, conceiving that justice had not been done my practice in the Report which was drawn up for the information of the Commander-in-Chief, a copy of which incorrect Report, his Royal Highness was graciously pleased to send me.

The State of the Patient's Eyes when placed under my Care.	Their present State.
David Grey, 1*st Garrison Battalion.* Violent inflammation in both eyes, which had existed more or less since he was first attacked in 1807. The cornea of each eye was entirely obscured by dense films. The lining of the eye-lids much thickened and granulated. He has been liable to weak and sore eyes from infancy. *State of Vision* —He could perceive light from darkness, but was unable to distinguish the *largest objects*, however nearly situated to him. He had been in this state of complete blindness eighteen months in one eye, and three years and a half in the other, and was in different military hospitals, under treatment, since his first attack in 1807. I took him from the Ophthalmic Depôt at Bognor, where he had been upwards of two years.	This man's conduct has been disorderly in the extreme, absenting himself, and getting drunk for days together. The inflammation nevertheless is now removed from both eyes. The films completely so in one, but not entirely in the other, which is also rather weaker when exposed to the light. This may be attributed to his irregular conduct; previous to which I considered his, the most promising case of the four. *State of Vision.*—With his best eye he can read a *newspaper* with fluency, and, as he states, for an hour or two at a time. He is able to discern the minute and second marks on a watch-dial, &c. and appears to see sufficiently well for all the purposes of life. *P. S.*—The vision in his worst eye materially improved after this inspection took place at Greenwich Hospital.

From the forgoing statements,—from the above official Letters and Extracts,—from the Reports of the state of the pensioners' eyes, when placed under my care, by order of His Royal Highness the Commander-in-Chief,—from the opinions officially given by the Members of the Ophthalmic Committee upon my practice,—the following facts appear :—

First.—The formation of an Ophthalmic Committee by His Royal Highness the Commander-in-Chief, "*To take into consideration my claims to a new and* "*successful treatment of the Egyptian ophthalmia.*"

Secondly.—That, by substituting a *knife of my own invention for the scissors* employed by Mr. Saunders, and also by using a *solution of alum* instead of a *solution*

of caustic, which he employed, it is evident that my mode of curing the third stage of ophthalmia is "*new.*"

Thirdly.—That it has been *acknowledged* by the late Director-General, the Medical Board, &c. &c., and *proved* by the testimony of the men taken from the Ophthalmic Depôt at Bognor, that the third stage of the disease (the general existence of the granulations) was wholly overlooked, and unknown in the medical department of the army, until I demonstrated it at the Army Medical Board, and at the York Hospital, in the beginning of 1812.

Fourthly.—That four of the six gentlemen composing the Ophthalmic Committee,—although they have not taken into account, *my discovery of a method for removing opacities of the cornea*, (without which the removal of the granulations will be of little, or no benefit to vision, and, consequently, the soldier affected with them will still *remain unfit for duty, and entitled to pension nevertheless*,) have declared it as their opinion, that *my method* of removing the granulations is an *improvement* upon that of Mr. Saunders, and *better adapted to the practice of the army*.

Fifthly.—That the cure of seven out of eight of the pensioners submitted to my care, in this third trial of my practice, all of them blind from *opacities of the cornea*, and six of whom shortly afterwards *returned to their duty as soldiers*, has *established beyond contradiction* "*my successful treatment of the Egyptian ophthal-*" *mia.*"—And,

Lastly.—That the great object which has so long and unceasingly engaged the humane attention of His Royal Highness the Commander-in-Chief, as so materially affecting the "health of individuals, and the effi-" ciency of the army at large," is at length attained, in

the discovery of a radical and " generally successful " mode of cure" for that dreadful disorder.

The final examination, by the Ophthalmic Committee, of the cases on which I had operated, in the *third* trial of my practice took place on the 5th of December, 1814; but their written opinions were not transmitted to the Commander-in-Chief until after the 10th of the same month.

On the 16th, to my very great astonishment, I received, by post, a printed circular letter, signed by the Secretary of the London Eye Infirmary, which begins by saying, " that he had been credibly in- " formed, an application had been made by me to His " Royal Highness the Duke of York, for a *grant* on " account of a new mode of treatment, successfully " employed by me for the cure of the dreadful oph- " thalmia," &c. He proceeds to state, as he terms them, " two *facts*," which, he pretends, is " for the " assistance of the Board, in their duty as censors." The first was,—that, being the pupil and friend of Mr. Saunders, " I learned from him the mode of " treating the eye in that *state of blindness*, which " results from violent destructive ophthalmia, and " which is most especially the consequence, or sequel " of the Egyptian ophthalmia;" and, after communicating the substitution of another instrument and application, " which from experience was a needless " one, that I had signified my intention to Mr. Saun- " ders, to report to Government the effect of the treat- " ment instituted in the cases, of some soldiers afflicted " with the disease in question, who had been under " my care."

The second statement, asserted as a " FACT," was

addressed to the public " more than to the Commit-
" tee," the former " *being liable* (as Mr. Battley says)
" *to a delusion*, in supposing that it is the cure of the
" Egyptian ophthalmia, which Sir William Adams
" has accomplished; a disease that in its greatest
" severity is only to be cured in a very early stage.
" It is the morbid state in which the organ is left
" after the acute inflammation has subsided, which
" this operation and practice, struck out by Mr. Saun-
" ders and adopted by Sir William Adams, under-
" takes to relieve." He concludes by saying, that if this statement be admitted, " the relict of the late
" Mr. Saunders has clearly a *prior* and a *stronger claim*
" to the consideration of Government" than myself.

Having learned that this printed letter, which, it will be shewn, was replete with mis-statements and mis-representations had been sent to His Royal Highness the Commander-in-Chief, to the first Lord of the Admiralty, to the Directors of Greenwich Hospital, as well as to all the subscribers of the London Eye Infirmary, the members of the College of Surgeons, and even to the Medical Journals, I attended to the suggestion of Dr. Baillie, to rebut these charges of the Ophthalmic Committee, by my letters and statements addressed to them during the trial of my practice, being already well informed of their total want of foundation, as far as related to any injustice on my part towards the late Mr. Saunders.

I accordingly wrote a letter to Dr. Farre, Physician of the London Eye Infirmary, and the intimate friend of the Secretary, being well assured that the latter would not have *dared* to publish such a document as that in question, if he had not been influenced by the former, and his official colleagues. This opinion was

strengthened by the recollection, that one of the professional gentlemen composing the Ophthalmic Committee, and who was intimately acquainted with the Medical officers of the London Eye Infirmary, had at the commencement of my practice on the blind pensioners, dissuaded me, in the strongest and most friendly manner, from pursuing the experiment, notwithstanding the Committee had been formed, and the pensioners were then under actual treatment, alleging that I should "*bring the surgeons upon me.*"

I had not, I confess, at the time, the least suspicion of the tendency of the hint, which was thus kindly given me: but, had I even comprehended its particular object, no apprehension of the consequences to which it alluded would have deterred me from proceeding; conscious of the undeviating integrity of my conduct, and persuaded of the immense benefit I was capable of affording the army, by fully establishing, by actual experiment, the general success of my practice in those cases, of persons who for many years, had been dismissed the service as incurable; and also, that the practice recommended by me, might, if followed up in the manner I had taken the liberty to propose, have effected the total eradication of the ophthalmia from the army.

The utter inaccuracy of Mr. Battley's pretended information at the commencement of his letter,—namely, "that I had applied to the Duke of York for a *grant*, "on account of my success in the treatment of oph- "thalmia,"—will appear by the following, official letter, from the Adjutant-General, dated Horse-Guards, December 24, 1814, in Answer to one which I addressed to him on the Receipt of the Secretary's printed Letter.

SIR,

I have the honour to acknowledge the receipt of your letter of the 22d instant, wherein you request that I will officially inform you, whether you have *directly* or *indirectly* made application to His Royal Highness the Duke of York for a *grant*, on account of a new mode of treatment successfully employed by you for the cure of the ophthalmia; in reply to which I can have no hesitation in saying, that, to my knowledge, you have made no such application *directly*, or *indirectly* to His Royal Highness *.

In compliance with your further request, I beg to transmit to you a copy of your letter of the 1st March, 1810, addressed to the Right Honourable Sir David Dundas, Commander-in-Chief, in which you distinctly mention what induced you to come forward, and offer your services for the cure of ophthalmia in the army.

(Signed) HARRY CALVERT,
Adjutant-General.

This letter to Sir David Dundas, referred to by the Adjutant-General, has been already inserted, page 16. I enclosed a copy of it which I had preserved, to Doctor Farre as a reply to Mr. Battley's. It fully proved that I had from the first acknowledged my being indebted to Mr. Saunders for the *origin of my practice*—that I had claimed nothing in that practice but what four of the six eminent professional gentlemen who composed the Ophthalmic Committee, to whom my practice and that of Mr. Saunders were fairly submitted, *most unequivocally awarded me*, namely, an improvement upon his practice in the removal of the granulations:—and that I had also from the first expressed "*an earnest wish to benefit the widow of my deceased friend*," disclaiming all reward or remuneration, for making my practice known for the good of the army.

The Secretary's asserted "fact," that I had learned from Mr. Saunders the mode of "*curing that state of*

* At this period I had not had the honour of any personal communication with the Duke of York, neither held communication, or correspondence with any other gentleman belonging to the Horse-Guards upon the subject, except the Adjutant-General.

" blindness *proceeding from the Egyptian ophthalmia,*" is equally unfounded as the parts thus refuted by my letter to Sir David Dundas. It has been already shewn by Mr. Fidkins's letter, *that he was not blind;* in whose case Mr. Saunders himself stated, and considered that " my notions originated," therefore that I could not have learned, from his case, to cure a symptom which did not exist. Indeed, by referring to that letter it will be seen, as already mentioned, that so far from Mr. Saunders having *removed* opacities from his eyes, he actually *produced* them from the violent inflammation, resulting from the use of the solution of caustic.

It may perhaps be said, that although Mr. Fidkins had no opacities, and consequently his vision was perfect when he first applied to Mr. Saunders, that, nevertheless, in the general practice of the infirmary, I must have frequently seen opacities of the cornea removed.

To this I reply, that I often did see opacities of the cornea removed in *common inflammation;* but I can with confidence affirm, that the opacities caused by the friction of the granulations, in cases of Egyptian ophthalmia occasioning blindness, are of a different origin and nature from general opacities* ; and that the remedies usually applied to remove the latter, will very often increase and aggravate the former.

From a case of blindness caused by Egyptian ophthalmia, which I have seen since I came to reside in London, there can be, I conceive, no question, that Mr. Saunders regarded the worst cases (such as those of

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* This opinion is fully confirmed by that of Mr. Cooper, contained in his Report of my practice, inserted page 28 of this Letter.

soldiers dismissed from the army, blind from opacities) as incurable; at least, if I may be permitted to rely on the statement of the patient, "that Mr. Saunders repeatedly assured him his case did not admit of a cure;" This is further confirmed by a fact within my own immediate knowledge and experience:—My present butler, William Dyer, who had been for some years, entirely blind from opacities produced by the Egyptian ophthalmia, consulted Mr. Saunders a few days prior to his death, who proposed operating upon the eye-lids which were everted, as affording him the only chance for the recovery of his sight, but having elsewhere undergone several operations on them, which had proved unsuccessful, he declined the proposal.

He again became a patient of the London Eye Infirmary soon after Mr. Saunders died; and after three months' attendance was discharged by the successor of that gentleman, the present senior surgeon of the institution, who was pleased jocosely to remark on the occasion, to the pupils standing by, and in the hearing of the patient, that "this was a species of case which he understood Mr. Adams undertook to cure; and, that if he could do so in the present instance, *he ought to get a patent for his process*," or words to that effect. After asking whether "he ever expected to see again," he gave him a prescription for some eye-water, and dismissed him.

The poor man on hearing this casual and sarcastic information, applied to me. He had been able only to discern light from darkness for the preceding four years, during which period, before he went to the London Eye Infirmary, he had been under the care of

the late Mr. Ware for two or three years, who at length declared his case incurable. By my assistance he was however restored to such a degree of sight, that he is able to read and write, and to fill his situation in my service in a very satisfactory manner, although one of the deep-seated membranes of the eye, (a comparatively rare occurrence from the Egyptian ophthalmia,) was rendered in a considerable degree opaque, by the violent and long-continued inflammation under which he laboured, before he became my patient*.

The next misrepresentation which I shall notice in the letter under consideration, is the affirmation, also asserted as a "fact," "that it is not the cure of the "Egyptian ophthalmia itself which I have accom- "plished; a disease which in its greatest severity is "only to be cured in a very early stage;" but that it is the mere *effects* only, of the original evil which I am capable of relieving.

The inaccuracy of this statement I also exposed by enclosing to Doctor Farre the following Report, which had been officially delivered to Government, and had been printed for circulation by the particular recommendation of Lord Sidmouth. This Report proves, that *I did undertake* to cure the Egyptian ophthalmia "in a very early stage" even at its very commencement, and also that I *had perfectly succeeded in doing so.*

WE, the Committee for General Purposes of the Workhouse of the parish of St. Pancras, in the county of Middlesex, consider it a duty we owe the public as well as an act of justice to Sir William Adams, officially to report the complete success which has attended his treatment in the cure of the Egyptian

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* Any gentleman who may think it worth the trouble to favour me with a visit, for his own private satisfaction, may hear from the man himself a confirmation of the facts, as they are here stated.

ophthalmia, on a large number of paupers belonging to the said parish workhouse, the management of which we superintend.

The Egyptian ophthalmia was first introduced into the house by a female child in the spring of 1811, and, during two years, communicated itself to nearly two hundred persons, notwithstanding the strictest attention was paid to the different regulations recommended, and practised, by one of the most eminent oculists in London, and who, or his assistant, constantly attended the patients.

During that period many eyes were lost, and some of the patients rendered totally blind. The highly infectious nature of the disease was evinced, not only by its extensive propagation among the paupers, but still more, by its having attacked one of the attendant surgeons, several of the nurses, and many other persons who had to do with the apartments, exclusively appropriated to the infected patients.

At the expiration of two years, it appearing, by the monthly reports of the house-surgeon, that the disease progressively increased to an alarming degree, instead of diminishing, the Committee for General Purposes, with the sanction of the General Board of Directors, solicited the professional assistance of Sir William Adams, who, after investigating the nature of the disease, liberally communicated to the house-surgeon a new mode of treatment, which proved completely successful, *by curing the disease in less than twelve hours after its commencement, in every instance where it was administered;* whereby the ophthalmia, within a month after the adoption of his new mode of practice, was effectually checked, and prevented spreading further through the house.

Sir William Adams also proved, to the perfect satisfaction of the attendant house-surgeon and his assistant, as well as to the then acting Committee for General Purposes, that all the patients who had been reported cured, and in consequence were permitted to associate with the healthy paupers of the house, were still labouring under one of the forms of the disease, which, it appeared, had wholly escaped the notice of the former oculist, and was the cause of the frequent relapses by which the infection had spread so extensively, and had hitherto proved so intractable.

For the cure of this stage of the disease, Sir William Adams has also happily discovered an effectual mode of treatment, which has proved, by experience, equally successful as the former *. In neither practice has there been a single instance of failure; nor has there been one relapse among the patients subjected to his new modes of practice. The disease is now totally eradicated from the workhouse. Seven patients still remain in the ophthalmic hospital, and they are nearly recovered.

As the number of patients cured (many of whom were in the worst state possible) has been so considerable, we cannot but express our decided opinion, and we rest assured, that the ophthalmia, which has hitherto proved so intractable, now admits of a certain and expeditious cure; and, from the very favourable result of the above new modes of practice, we confidently anticipate the great benefit which, by the adoption of these important discoveries, may be derived to the general po-

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* This refers to an *application* which was employed in almost all the cases at St. Pancras workhouse, as a substitute for any kind of surgical operation.

pulation of the country, by the extermination of this painful and destructive disease.

W. L. DAVIES (Chairman of the Committee,)
WM. BUNDY,
NICHOLAS LADLER,
JOHN HUGHES,
JOHN HALL,
WM. INWOOD,
CHARLES SEWELL.

St. Pancras Workhouse,
22d Aug. 1814.

It is resolved by the above Committee, that Mr. W. L. Davies, Mr. Wm. Bundy, and Mr. Nicholas Ladler, be deputed to present the above report to His Royal Highness the Commander-in-Chief, to the First Lord of the Admiralty, to the Secretary of State for the Home Department, and to the Secretary at War, and to give such further information as may be required.

I have thus proved, as I presume, beyond all contradiction, the *absence of all foundation* for the following charges, contained in Mr. Battley's letter. 1st. The application for a *grant*, on account of a new method of curing the effects of the ophthalmia. 2dly. That I had learned from Mr. Saunders the mode of curing the *state of blindness* resulting from that disease. 3dly. That the public laboured under a delusion, in supposing that I was capable of curing the Egyptian ophthalmia at its commencement. And, 4thly. The making a claim on Government to the injury of the relict of Mr. Saunders. While I have equally proved that I had always readily and freely acknowledged having been indebted to Mr. Saunders for the *origin of my practice.*

For this production, (so actively and widely circulated), Mr. Battley, in a public resolution, received the thanks of the General Committee of the London Eye Infirmary, " for his *spirited conduct* in asserting those " claims" which the Committee adds, " it publicly maintains" ! ! !

Having, as already stated, put Doctor Farre (and, through him, the medical officers of the London Eye Infirmary) in possession of the above documents, as well as of the knowledge of my practice and conduct, I trusted that his sense of justice, would so far have operated, as to secure me from the continuance of any hostile attacks, from the medical officers of that institution. But my hopes were soon disappointed: the very letter and documents which I sent to him, and which I had supposed would ensure my future tranquillity, were exultingly employed* as the ground-work of a renewed and more formal attack. The former accusation of having demanded a *grant*, and the insinuations of illiberal conduct towards Mr. Saunders's widow, were now necessarily abandoned. They had been proved notoriously false, and were left to redound to the disgrace of those, who had invented, and propagated them.

These gentlemen had, however, now ascertained, by my letter to Sir David Dundas, the real nature of my communication to Government, and that I had proposed *the establishment of an Ophthalmic Hospital for the cure of the numerous blind army pensioners.* They determined, from what motives of alarm, I shall not pretend to suggest, by every means in their power, to defeat an object, which was obviously pointed out by every principle, of humanity and sound policy.

The three medical officers of the infirmary being, as I say, resolved, if possible, to prevent the expected establishment of the Ophthalmic Hospital by

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* The gentleman who formerly admonished me of the intended attack "of the Surgeons," has since mentioned to me that it was said, if I had not replied to Mr. Battley's letter, the Medical Officers of the London Eye Infirmary "could not have attacked me."

Government, (which, from the successful trial of my practice, I presume they thought it probable would be formed without delay,) in order to accomplish their object, first formed a *Sub-Committee*, under the pretence, that the "Rights of the "Infirmary" were invaded; this *Sub-Committee* appointed these three medical officers to draw up a *Medical Report*, containing *their opinion* of my practice, as compared with that of Mr. Saunders; which was afterwards read over to a *General Committee* of Governors of the London Eye Infirmary, together with a *Statement*, as I have been credibly informed prepared by *the same individuals* who had already prepared the Medical Report. Be this, however, as it may, the General Committee adopted that Statement as its own sentiments, and, together with the Medical Report, it was printed and published, under the following title of—

A Special Report of the General Committee of the London Infirmary for curing Diseases of the Eye; in which certain Pretentions of Sir William Adams, advanced in the Official Papers, published by Order of the Hon. Directors of Greenwich Hospital*, lately submitted to a Medical Committee, appointed by Government, and affecting the Rights of the Infirmary, and the Merits of the late JOHN CUNNINGHAM SAUNDERS, Esq., its Founder and Surgeon, are examined and disproved, by the Correspondence of Mr. Saunders, and other Documents.

The Medical Report, consists of a laboured examination of garbled extracts, from the correspondence already fully examined in the commencement of this Letter, which took place in 1809, between Mr. Saun-

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* The medical officers seized this opportunity to render the "Special Report "of the London Eye Infirmary" the vehicle of an answer to the official papers published by your Honourable Board; in reply to which answer, I "*specially*" refer my readers to my work on Cataract, published with this Letter.

ders and myself; also of my Letter to Sir David Dundas, and Doctor Farre. The former Letters were published in an Appendix to the Report. That to Doctor Farre was withheld, as I presume, from my threat of exposing to the world the cruel, and unjust manner in which Mr. Saunders's widow had been treated by those very persons, who, when they endeavoured to injure me, affected so much zeal for her interest and support. Some of these particulars will be hereafter briefly noticed.

The Report closes with the following conclusions, drawn from the supposed facts which it contains.

1st. That the peculiar change of the conjunctiva, produced by the purulent or Egyptian ophthalmia, and causing the blindness which so frequently attends the chronic stage of that disorder, was discovered by the late Mr. J. C. Saunders, the founder of the infirmary, who practised a surgical operation, and employed other means for its removal, and was thus enabled to restore to sight many persons, whose cases had been previously considered desperate; consequently, that the medical officers of Greenwich Hospital, by asserting in the official papers, published by order of the Directors, that the honour of the discovery, and treatment, above mentioned belong to Mr. (now Sir William) Adams, have been led (no doubt unintentionally) to circulate a Statement completely unfounded, and tending to deprive Mr. Saunders of the merit exclusively due to him.

2dly. That Sir William Adams, then a gratuitous pupil of Mr. Saunders, learned from him the facts above mentioned concerning the Egyptian ophthalmia, and that he has only made the unimportant alteration of removing the diseased growth by a different instrument.

3dly. That it was the common practice of Mr. Saunders to employ emetics, in the early stage of every variety of acute ophthalmia. The claim, therefore, of Sir William Adams to originality, rests on no better ground in this, than in the former case.

4thly. That the treatment of the chronic stage of the Egyptian ophthalmia, is simple in its principle, and easy in execution, so that any surgeon, who has received an ordinary education in the treatment of diseases of the eye, may be considered as competent to understand and manage the complaint, *when its nature has been explained.*

In reply to the *first conclusion* of this Report I repeat that it is *not* the peculiar change of the conjunctiva produced by the Egyptian ophthalmia which causes *blindness*, as asserted by the medical officers of the

London Eye Infirmary,—but that it is the opacities of the cornea, resulting from the friction of th es granulations, which causes blindness, and such *i* the fact adverted to; in the following extracts from the Letter of the Medical Officer of Greenwich Hospital to the Directors, to which this conclusion refers:—

In addition to the gratifying contents of the second Report, we think it our duty to state, for the information of the Board, that Sir William Adams has discovered a mode of curing the Egyptian ophthalmia, which has been successfully practised upon several of the pensioners, some of whom *had been blind* for three or four years, and given up as incurable by the most eminent oculists then in London. The communication that this destructive and hitherto intractable disease admits of cure, we conceive will be gladly received by the Board; and the promulgation by Sir William Adams of this important discovery, be considered as a great *national desideratum*.

By the adoption of *his practice* we are of opinion, from what we have seen of its effects, that a very large proportion of the *seamen* and *soldiers* who have been discharged the service, *blind of the ophthalmia*, might be again rendered fit for duty, or be made useful members of society.

It is evident from these passages, that the Medical Officers of Greenwich Hospital allude to the practice of removing the opacities of the cornea, as the cause of blindness, for which, and not for the granulations, men were discharged from the army and navy, and it has been already proved, by the case of Fidkins, that Mr. Saunders's practice, which I witnessed while with him, was not the removal of opacities of the cornea. Indeed, the physician of the London Eye Infirmary, who edited the posthumous work of Mr. Saunders, does not venture to state in it any mode of treatment for the removal of these opacities*, and even

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* His words are, "In this essay, the granular state of the conjunctiva and change of structure, which is occasionally produced by this acute inflammation, and which protracts the disease in its chronic form, would have been further considered. He noticed it at the conclusion of chapter 1; and the treatment which he intended to recommend, in the inveterate form of the disease after having long

the other framers of this report are equally cautious not to commit themselves, as the Secretary had done, by asserting, that I learned from Mr. Saunders the mode of *removing opacities of the cornea*, which are the real source of blindness, and not the granulations, as they wish to insinuate.

Hence these "pretensions" advanced by the Medical Officers of Greenwich Hospital in their statement to the Directors, are not "disproved," they being well aware, from their own practical experience, (for they themselves, took charge of the greater part of the blind ophthalmia patients, after having witnessed my mode of treating that disease,) that the removal of the opacities, after the granulations are wholly cured, constitute by far the most difficult, as well as the most essential part of the treatment; and it is evident that it is the *Medical Officers* of the *London Eye Infirmary*, who were incorrect in their statement respecting Mr. Saunders's supposed discovery of curing blindness, &c., in the chronic or granular stage of Egyptian ophthalmia.

These Medical Officers in the *second conclusion*, drawn from their Report, have thought proper to state, "That Sir William Adams, then a gratuitous pupil of Mr. Saunders, learned *from him the practice already mentioned*, concerning the Egyptian ophthalmia, and that he has only made the *unimportant alteration, of removing the diseased growth by means of a different instrument*."

My obligations to Mr. Saunders were, it has been shewn, freely acknowledged by myself; but Doctor

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practised it with success, was excision of the granular portions of the conjunctiva. For this operation, he preferred the scissors to the knife; and he prevented the subsequent morbid growth of the conjunctiva, by frequently injecting on it solution of alum or of the nitrate of silver."

Farre, Mr. Travers, and Mr. Lawrence, further affirm, that the improvements which I have introduced, in the cure of the granulations of the lids, are "*unimportant alterations:*"

Sir Henry Halford, Doctor Baillie, Mr. Ashley Cooper, and Mr. Abernethy, are, decidedly of an opposite opinion. The public will determine on the character, and validity of these opposing authorities!!

The *third conclusion* mentions, that it was "the common practice of Mr. Saunders to employ *emetics* "in the early stage of every variety of acute ophthal- "mia; and that the claim of Sir William Adams to "originality rests on no better ground in this, than in "the foregoing case."

I beg my reader's particular attention to the following inconsistencies.

On the 16th of December, 1814, it was affirmed, in a printed circular letter, under the *signature* of Mr. Battley, Secretary of the London Eye Infirmary, (and which, as I have already stated, that person would never have *dared* to publish, without the knowledge and approbation of the Medical Officers of the Eye Infirmary,) that "it was *not the Egyptian ophthalmia* "*which Mr. Adams undertook to cure*, as that disease "is only to be cured in a very early stage." This incorrect assertion was followed, with increasing inaccuracy, on the 24th of the same month, (after I had proved that I actually *did undertake to cure, and had cured, the disease in its earliest stage, namely, at its very commencement*,) by the declaration, of the same individuals, that Mr. Saunders also employed *emetics*, in the incipient stage of *every species of acute inflammation.*

In the Report itself, the physician endeavours to "recall to my recollection, that I was taught at the "London Eye Infirmary the curative powers of "emetics, in the acute forms of ophthalmia;" and that, "among the formula kept at the Infirmary, "none were more constantly used by Mr. Saunders, "at the commencement of acute ophthalmia, whether "of the external or internal tunics of the eye, than "simple solution of tartar emetic, so administered as "either to nauseate, or produce full vomiting. His "correct reasoning on the latter effect of this remedy "will be found in his Essay on Inflammation of the "Iris, which was first published in the Medical and "Physical Journal of the Year 1806*."

The following are Mr. Saunders's words, in the above Essay:—

"Our object is therefore to impair the force of the heart, and nothing will more completely accomplish this intention than the abstraction of blood. Whatever other means medicine furnishes may be employed with the same view.—It may therefore be right, after the exhibition of cathartics, to employ the tartarised antimony, in moderated doses, in order to enfeeble the pulse. If vomiting be excited by it I see no cause of regret, as the straining of the eye in the act of vomiting is more than compensated by the weakness of the pulse, which a state of sickness, (*nausea*, I presume, Mr. Saunders means,) produces."

Now, what was the formula alluded to by Dr. Farre in the Special Report, as kept in the Infirmary? Two grains of emetic tartar, dissolved in half a pint of water, two or three table-spoonfuls of which were given every three or four hours to *keep up nausea, but not to excite vomiting;* the patients being directed to *discontinue the medicine whenever vomiting was produced by it.* This mode of employing the medicine, as I have learned from several gentlemen

* See Page 10 of the Special Report, &c.

acquainted with the practice of the Infirmary, is still continued in the manner prescribed by Mr. Saunders.

I never knew Mr. Saunders administer an emetic at the commencement of any inflammation of the eye, much less for the cure of the Egyptian ophthalmia; on the contrary, while I attended his Infirmary, it was his *invariable direction* that the medicine should be discontinued *as soon as vomiting was produced;* and, from the above passage in his essay, it is quite obvious, that he regarded the *straining of the eye* as an unfavourable circumstance.

That it was the *nauseating* and not the *vomiting* practice which Mr. Saunders recommends, is further proved, by the fact well known to every medical practitioner, and of which Doctor Farre could not have been ignorant, (or he would be very unfit for the situation he holds), that the effect of *nausea* upon the system is to *lessen* the *force* and *frequency* of the *circulation;* thereby producing an effect similar to the *abstraction of blood*, so strongly recommended by Mr. Saunders.

I shall now give the substance of a paper in which I described *my practice*, and which I published in the Medical and Physical Journal for June, 1813, in consequence of that practice having been erroneously reported upon by three Army Surgeons, appointed by his Royal Highness the Commander-in-Chief, "to inquire "into my success in immediately putting a stop to the "Egyptian Ophthalmia at its very commencement." These gentlemen, like the officers of the Eye Infirmary, *notwithstanding my particular explanation of their difference*, had reported the two modes of practice (the *nauseating* and the *emetic*) to be the same. I sent copies of this Paper, after its publication, to the Adjutant-General and *to these Army Surgeons.* The

latter *did not venture to reply*, thereby *fully admitting* its accuracy. My words are:—

The diminishing the action of the heart and arteries by inducing *nausea* is a practice which most professional men have pursued, in lessening acute inflammation in various parts. It is not therefore a matter for surprise that it should have been tried in a disease where this character is so strongly marked as in the Egyptian ophthalmia; but I know of no one who has recommended *violent vomiting* to be excited and continued in the manner I have described; although it is probable that vomiting may *accidentally* have been produced even by small doses of the medicine, when given to produce nausea.

To produce nausea, a *quarter* or at most *a third* of a grain of the tartar emetic is exhibited for a dose once in *three* or *four hours* to an adult; whereas, in my practice, I should direct *two grains* to be given at first, and *half that quantity* to be repeated every *half-hour*, until *full vomiting* is produced, which is to be kept up for *eight* or *ten* hours, by repeating the dose at longer intervals.

The effect of *nausea* is to lessen arterial action; consequently, during its existence, inflammation in any organ or viscus must be diminished; but I believe its further progress has been very rarely if ever immediately arrested by so gentle an operation of the medicine.

The intentions I had in view, in adopting the practice in question, were *first*, by the *violent excitement of vomiting*, to produce a *new action* in the inflamed vessels, whereby the *morbid action*, constituting the disease, would probably be removed. *Secondly*, by keeping up *continued sickness and vomiting* for so many hours, considerably to exhaust the animal and vital powers, whereby the circulation would become so languid, as almost to amount to syncope, during which it is impossible that inflammatory action can proceed*. By having recourse to the remedy as early as possible, before the disease could establish itself, it occurred to me, that not only the morbid action would be removed, by inducing a different action; but, by the long-continued sickness, and consequent exhaustion, all disposition to a recurrence of inflammatory action would be removed. The event has most fully answered these expectations; as in no one instance, in which I have known the remedy employed, (in conformity to the rules just laid down,) has it failed of success.

The *nauseating practice* has indeed also been tried by different surgeons in the army, during the period the Egyptian ophthalmia raged so extensively among the soldiery; and in a Report drawn up by three professional gentlemen, appointed, by his Royal Highness the Commander-in-Chief, to inquire into the probable efficacy

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* The idea of this practice originated from the effects of some hours continued sea-sickness upon myself, which were precisely what I have described above. I resolved upon imitating it, in order to cure violent acute ophthalmia; which practice I had soon after an opportunity of successfully trying upon a number of persons in St. Pancras workhouse, affected with the Egyptian ophthalmia.

of my practice, if introduced into the medical practice of the army, they also intimate the two modes of treatment to be similar, although I explained to them, at the conference I had with them on this subject, the important difference both in their intention and effect.

The above quotations from Mr. Saunders's Paper, published in the Medical and Physical Journal in 1806, and from mine, which appeared in the same periodical work in 1813, render it obvious, that *his mode of practice* in the treatment of acute inflammations of the eye, and that which *I have pursued for the cure of the Egyptian ophthalmia at its very commencement, are entirely opposite.* His object was to *lower* the action of the heart and arteries, as a *sedative*, if I may use the term, to the circulation; while mine, *on the contrary*, was to *increase in the highest degree* their force and frequency, in order to excite a *new action* in the inflamed vessels, and thereby *at once* to destroy inflammatory action, which can only be effected by the most violent stimulus to the circulation*.

And here it may be asked, if, in 1813, I had published Mr. Saunders's practice as a discovery of my own, why did not Doctor Farre, at *that period*, come forward to claim it for Mr. Saunders, as he has since endeavoured to do? it being barely possible, that he should not have seen or known, of my publication, and the practice it promulgated; a contro-

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* The practice of Mr. Saunders (the nauseating practice) is by no means peculiar; but keeping up *violent vomiting* for *eight or ten hours* in the manner which I have directed, (in order to imitate sea-sickness,) is a mode of cure which, as far as I can learn, no one but myself *has ever practised.* Indeed, from its severity, I consider it more peculiarly applicable to public practice; and although, were I again to be attacked with Egyptian ophthalmia, I should employ it on myself, I have never ventured to adopt it on patients in private practice.

versy having been maintained respecting both its novelty and efficacy, for nearly twelve months, during which period six or eight Papers (I believe) were published, on the subject, in the Medical and Physical Journal. But I have reason to think there was no suspicion, in 1813, either that a "grant" was about to be bestowed upon me by Government for the cure of ophthalmia, or that it was probable I should be placed at the head of an ophthalmic hospital; whereas, in 1814, *things had assumed a different appearance*.

The result of the trial of my practice on the pensioners had now proved successful; and favourable reports had been given of it to his Royal Highness the Commander-in-Chief, by the Ophthalmic Committee; the contents of these reports, *it is more than probable*, had reached the ears of the Medical Officers of the Eye Infirmary, two of the Ophthalmic Committee being the friends and colleagues of the surgeons of that Institution.

The misrepresentations (to use no harsher term) contained in the three first conclusions of the Report of the Medical Officers of the London Eye Infirmary, "for "the *candour* and *impartiality* of which, as well as for "the *accuracy* with which they had examined the do- "cuments submitted to their inspection," they, in a public resolution, "received the thanks of the Ge- "neral Committee," have been as fully exposed in the foregoing pages, as the inaccuracies in the previously printed Letter of their Secretary, which are in several particulars at variance with each other.

The *fourth conclusion* of the Medical Report,—namely, "That the *mode* of treating the *third stage* "of the Egyptian ophthalmia is simple in its prin- "ciple and easy in execution," and "that any sur- "geon, who has received an ordinary education in

" the treatment of diseases of the eye, may be com-
" petent to understand and manage the complaint,
" *when its nature has been explained*,"—perfectly coincides with my own opinion.

There can be no doubt, but that, among the surgeons of the army, there are gentlemen who have received the most liberal education, both general and professional; and I have no hesitation in declaring my conviction, that there is *no public service*, which can boast of so much talent, and respectability as our own, in regard to professional attainments, while experience has proved that we are indebted to the army, for many of our most eminent surgeons and physiologists. In the present day, some of the most difficult and rare operations, have been first successfully performed by surgeons belonging to the army. Notwithstanding these facts, it is however equally certain, that highly competent as they are, and always have been, in every other respect,—the treatment of diseases of the eye, has heretofore formed only a very small part of their professional education.

I took the liberty, in 1812, of pointing out to his Royal Highness the Commander-in-Chief (whose anxiety for the welfare of the army is universally known and acknowledged) the great benefits which would result to the public service, if the young army surgeons were instructed in ophthalmic, as well as general surgery. For this purpose I ventured to propose, that if those, among the numerous blind pensioners, whose cases admitted of cure, were called up for treatment, the hospital in which they were placed should be made an ophthalmic school, where lectures on all the most important diseases of the eye should be delivered.

This measure appeared to be necessary, from the melancholy fact that some thousand soldiers had been dismissed the service upon pensions, blind from ophthalmia, the cure of a considerable number of whom my experience had proved to be practicable. It was my language, in my first interview with the Adjutant-General, more than five years ago, that "if these men admit of being cured, subsequently to "their discharge from the army, (as my success "had incontestably demonstrated,) that were the "army surgeons instructed in the necessary modes "of treatment, they could equally be relieved "before their dismissal, whereby their services and "pensions might be retained."

Hence it is obvious that I was the first person to suggest that important improvement in the medical education of the young army surgeon, which is now not only acted upon, but, in the printed medical regulations of the army recently issued by the present Director-General, is actually held out as an indispensable qualification. It has been also proved that I was the first person to demonstrate to the late Director-General, and to the Army Medical Board, the nature and seat of the granulations of the eye-lids, and their appropriate mode of cure.

Indeed, that eminent and candid physician, Dr. Vetch, whose practice contained in his excellent treatise on the Egyptian Ophthalmia, has, in a great degree, heretofore regulated that of the army, subsequently sent me a polite and gratifying message, by an army surgeon, thanking me for the introduction of a practice into the army, which promised to be so highly beneficial.

If, therefore, the army surgeon is now capable of curing this description of case, " after its nature has " been explained," it is to me the Government is indebted for the information.

The following are the names of the Gentlemen who composed the General Committee of the London Eye Infirmary; together with a correct copy of the prominent parts of the " Statement," founded upon the Medical Report whose accuracy has been just examined.

At a Meeting of the General Committee of this Charity, held at the Infirmary, on Wednesday, December 28, 1814:

PRESENT:

Sir CHARLES PRICE, Bart. President, in the Chair.

John Ansley, Esq. Ald.	Rev. Samuel Crowther.
Harry Sedgwick, Esq.	H. Kensington, Esq.
Solomon Hougham, Esq.	John Cazenove, Esq.
Michael Bland, Esq.	S. S. Hunt, Esq.
John Bainbridge, Esq.	George Clark, Esq.
John Hodgkinson, Esq.	Thomas Churchyard, Esq.
John Twemlow, Esq.	D. D. Davis, M. D.
T. D. Croskey, Esq.	Robert Gooch, M. D.*
Ralph Price, Esq.	J. R. Farre, M. D.
William Brydon, Esq.	Benjamin Travers, Esq.
John Smith, Esq.	William Lawrence, Esq.
William Crawley, Esq.	Richard Battley, Esq.
Richard Wace, Esq.	

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* This gentleman, actuated by the most honourable feelings, on hearing part of the contents of the Medical Report read at the meeting of this Committee, withdrew in disgust; but to his surprise afterwards found his name affixed to a public document, the nature of which he utterly disapproved. With these circumstances (although we were strangers to each other) he thought proper to make me acquainted, through the medium of an eminent physician, our mutual friend. He afterwards called upon me, when I shewed him my letters to the Ophthalmia Committee, and their Reports, and explained to him the difference between the *emetic* and *nauseating practice*, which he fully admitted, and declared that the latter, and not the former, was the practice pursued at the London Eye Infirmary. At a subsequent visit he told me, he had informed Doctor Farre of the contents of the documents I had shewn him, and the purport of our conversation respecting the emetic practice; notwithstanding which, in a second edition of Mr.

Prominent Parts of the Statement read and adopted at the above Meeting.

First. The ready attention of His Royal Highness the Duke of York, the Commander-in-Chief, to certain claims of curing the Egyptian ophthalmia, advanced by Sir William Adams, and the appointment of some of the most distinguished members of the Colleges of Physicians and Surgeons, to ascertain, by direct observation, the practicability of curing certain men, rendered unserviceable by this disease, are proofs of the great solicitude of His Royal Highness, and of His Majesty's Government, to promote the happiness, and to secure the usefulness of the soldier.

These unfounded claims however of Sir William Adams to the discovery *or improvement* of a method of curing the Egyptian ophthalmia, of which *it has been shewn that he was neither* the discoverer *nor the improver*, infringe the rights of this Infirmary, at which he was merely a student, and the merits of the late Mr. Saunders, under whom he was only a gratuitous pupil.

Secondly. The General Committee is forcibly struck with the early developement of a plan, which may be traced through all the papers, official and unofficial, viz. in addition to an expected donation, proved by No. IV. in the Appendix, an intended proposition to Government to establish Hospitals, and to call in all the pensioners to be examined, and attended by the party interested. This purpose (for private emolument, so honourably rejected by their Surgeon, the late Mr. Saunders) produces an unchanging language through the documents IV., V., VI., and the paragraphs at pages 4 and 5, of the Greenwich Official Papers.

Thirdly. The successful treatment of the *acute* and chronic stages of the Egyptian ophthalmia at this Infirmary, *at which Sir Willium Adams was taught the method*, which he has submitted to the scrutiny of the Medical Committee appointed by Government, forms an essential part of the claims to public favour, on which the Governors of this invaluable charity rest their pretensions.

After *kindly* offering to Government, upon the condition, however, "of an *adequate contribution from the national purse*," the use of the Infirmary for those purposes, the utility of which I had, by three separate trials of my practice, fully established, the last statement concludes as follows :—

Fourthly. "This proposition, on the plan of an equivalent, is not suggested as a bar to any personal donation, which the generosity of Government might bestow on the relict of the late John Cunningham Saunders, Esq., the Founder of this Infirmary, and the discoverer of the practice*."

Saunders's posthumous work, just edited, Doctor Farre refers to the Special Report of the Eye Infirmary, and makes a quotation respecting the nauseating practice as grounds for charges against me, although, from Doctor Gooch, he was fully aware of their total want of foundation!!

* It is worthy of remark, that in the printed letter, bearing the signature of the

The medical officers, from whom I have reasons believe this statement altogether emanated, although sanctioned by the signatures of gentlemen who no doubt considered that statement well founded, think proper to assert,—that I am not an "*improver*" on the practice of Mr. Saunders; while four of the highest professional authorities in the kingdom have declared themselves to be of a contrary opinion. *They* have determined the question with respect to my pretensions*.

Secondly, As to my conduct, in 1809, which is alluded to in the reference made by the Committee to "No. 4 in the Appendix," Mr. Russell's letter, page 10, bears the most *unequivocal* and *decisive* testimony of its perfect honour and delicacy towards Mr. Saunders. And here I appeal, not merely to the candour, but to the common sense of my readers, whether any passages in my letters to Mr. Saunders, can be made by the most malignant perversion of words, to convey such a meaning, as the Committee have been blindfoldedly persuaded to assume.

The General Committee also refer to a letter written by me to Sir David Dundas, then Commander-in-Chief, dated March 1, 1810, from whose contents they deduce, that my conduct had been influenced by

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Secretary of the Eye Infirmary, and dated *Dec. 16th*, when it was supposed that *I* was about to receive a *grant*, great anxiety is expressed for the interest of the "relict" of Mr. Saunders; but on the *24th of the same month*, after it had been ascertained that I had *proposed the establishment of an Ophthalmia Hospital*, the "relict" is but barely mentioned at the conclusion of the "Statement," while the "importance and success of the Infirmary" is largely dwelt on, and the *generous offer* is made of it to Government; upon the condition however of "*obtaining an adequate contribution from the National Purse!*"

It would appear that a *change of circumstances* required a *change of measures*.

* See the Reports of the Ophthalmia Committee, page 25.

selfish and interested motives*. That document the Committee could never, I presume, have considered; and from misapprehension alone of its contents, could have been induced to become the instruments of any censure upon my conduct.

In that letter I *most fully* and *emphatically* disavow, all remuneration for *myself;* but *specifically* mention my earnest wish to benefit *Mrs. Saunders.*

Equally unjustifiable are the insinuations, that the Directors of Greenwich Hospital, and its medical officers, could have lent themselves to any object in my favour inconsistent with their own honourable characters, or which had not, as their exclusive object, the great design of that hospital, the benefit of its inhabitants, and the general interests of humanity; or would have attested any but proved and well-authenticated facts.

Thirdly, The declaration that I was taught the successful treatment of the *acute and chronic stage* of the Egyptian ophthalmia at the London Eye Infirmary, which I had submitted to the scrutiny of the Medical Committee, appointed by Government, has already been unanswerably proved *wholly destitute of foundation.*

Fourthly, In respect to the application to Government in behalf of the relict of Mr. Saunders, it is shewn by my letter to the Commander-in-Chief in 1810, that I had anticipated them by more than four years.

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* In a letter which I have received from the Adjutant-General, dated June 28, 1817, is the following passage:—

"His Royal Highness the Commander-in-Chief entertains a just sense of the "zeal and liberality with which you communicated your modes of practice; and "recollects the candour with which you uniformly spoke of the merits of the late "Mr. Saunders."

To this statement, however, the Committee gave the sanction of their names, and resolved on its publication, together with the Medical Report! and also that a deputation should be appointed to wait on His Royal Highness the Duke of York with these papers, and the offer of the Infirmary for the benefit of the army, as has been already mentioned.

In answer to this deputation, His Royal Highness was pleased to observe, that it was not for him to determine, from whom the mode of curing the Egyptian ophthalmia originally proceeded; but that I was the first person who had demonstrated to his satisfaction that the peculiar form of the disease was susceptible of cure. This His Royal Highness was pleased personally to communicate to me. The First Lord of the Admiralty informed the deputation, that he should be entirely governed by the decision of the Commander-in-Chief.

The following letter contains a very gratifying assurance of His Royal Highness's sentiments, in regard to the attacks made on me from the London Eye Infirmary:—

SIR, *Horse-Guards, 3d Jan.* 1815.

I HAVE the honour to acknowledge the receipt of your letter of the 30th ult., with its enclosures, and to assure you, that the contents of the papers, to which you allude, have left no impression on the mind of His Royal Highness the Commander-in-Chief *unfavourable to your character or professional pursuits* *.

I have the honour to be,

SIR,

Your most obedient servant,

H. CALVERT,

A. G.

To Sir William Adams,

&c. &c. &c.

In the following year, Lord Palmerston, (whose firm

and honourable conduct in every stage of this business I feel myself called upon most gratefully to acknowledge,) stated to the House of Commons, that Government had taken into consideration, the expediency of calling up the numerous blind pensioners, for the purpose of putting them under my care. At the same time he expressly disavowed entering into the question of, who was the original inventor of the mode of cure, a question, which had been much agitated elsewhere. Nevertheless, a paragraph in a newspaper, as I have been informed, attributed language to Lord Palmerston which he never employed, and this paragraph originated, and prompted the hopes of a *second deputation*, which waited upon him, and the Secretary of State for the Home Department.

It had now received the addition of several Members of Parliament, who were Governors and Patrons of the Institution which it represented. But this effort was not more successful than the former. Lord Sidmouth, and Lord Palmerston, had perused the Reports of the Ophthalmia Committee on my practice, and formed their decision in my favour.

I had thus, by obeying the invitation of the Adjutant-General, and by my respectful acquiescence in the humane wishes of His Royal Highness the Commander-in-Chief, as conveyed to me through the Adjutant-General, in 1811, brought upon myself *four successive attacks* from the London Eye Infirmary: *First*, Mr. Battley's letter; *secondly*, the Special Report of the General Committee; to which may be added, the two successive deputations, to the different departments of Government.

However evident it may be that the above causes, to-

gether with the "Official Papers," published by order of your Honourable Board, have principally contributed to the publication of the Special Report of the London Eye Infirmary, yet we may look to some more direct, and immediate exciting cause, for the conduct of its medical officers. It will probably be found in the two following letters :—

(LETTER I.)

Homerton, 2d February, 1815.

DEAR SIR,

IN conformity with your request, I beg leave to state the circumstances attendant on the operations performed on my left eye, for cataract, by Mr. Travers.

In the Spring of 1812, I placed myself under Mr. Travers's care, in order to undergo the operation of couching the cataract, who accordingly performed it, which confined me to my room eight days. A fortnight afterwards, a second operation was performed, from which I suffered very acutely, and it was followed by severe inflammation, which confined me to my room ten days.

My sight was now much worse than before any operation was performed, and, after the delay of some months, a third operation was proposed, which I was given to understand would be the last.

This also I submitted to, and, as soon as it was completed, Mr. Travers asked me if I could discover any object with it, and, on my answering in the negative, he said, "If that is the case, I am afraid we can do nothing more for you."—The inflammation, which followed this operation, also was very severe, requiring the employment of various means to remove it. Three months after this, having called upon Doctor Farre, that gentleman told me, it sometimes required more than three operations to remove a cataract, when I accordingly again applied to Mr. Travers, who performed a *fourth* operation; but very little benefit resulted from all these, as I could only perceive light with this eye.

Four months afterwards I again called upon him, and proposed to undergo a *fifth* operation, so anxious was I to recover my sight. He assented to it, remarking, "That, if it did not succeed, I should be only where I was," or words to that effect. I told him, before the operation, that if, by making a greater pressure with the instrument it would answer a more effective purpose, to do so, and not to regard the pain it would give me, as I would much prefer it to the frequent repetition of the operations. He smiled, but made no reply.

This operation was most severe, and I shall never forget its effects; as for two days and nights I was in the utmost agony, and for four days and nights I scarcely got an hour of natural sleep. None could give a better description of my sufferings than the servants who attended me at the Guildhall coffee-house.

Six months more had elapsed when Mr. Travers proposed a *sixth* operation, which, from my anxiety to do something to support my large family, I was almost

inclined to submit to, had not the recollection of my late severe sufferings at length made me diffident, which feeling was increased by the recollection that Mr. Travers, upon every occasion, spoke with very little confidence of the probable favourable result of the operations.

A few days after my last interview with Mr. Travers, I accidentally met Dr. M——— a gentleman nearly related to a most worthy and esteemed friend of mine, who inquired very anxiously about my sight; and on learning what I had endured, and all to no purpose, desired me to call upon him, when he put into my hands your book on Diseases of the Eye, and one of the Official Reports published by order of the Directors of Greenwich Hospital; adding, that you were then in France, and that I ought by all means to consult you on your return. This was the first time in my life that I had ever heard of your name; and after getting your Observations upon Cataract read to me, as well as the account of the surprising cures performed upon the pensioners, I thought it a duty I owed to my family, and an obligation to Dr. M., who had so kindly interested himself for me, to consult you on your return from Paris. I did so, when, without hesitation, you pronounced that the impediment to sight might be removed by one operation, which was of quite a different kind to that usually practised at the London Eye Infirmary.

In communicating your opinion to my family and friends, all of them concurred that it was my duty (after having submitted to five operations during two years and nine months, without deriving the least benefit from them, and scarcely receiving an encouraging hope, even if I did undergo a sixth by Mr. Travers) to place myself under your care; you therefore accordingly performed the operation on the 20th October, 1814, (at my lodgings in Bond-street,) which was less painful, and of much shorter duration, than either of Mr. Travers's, and from which not the slightest inflammation resulted.

Immediately after the operation you tried me with a glass. I told the time by a watch, and the next day I read a paragraph in a newspaper with distinctness. On the third day I took a walk in the Park, with merely a shade on my eye, and on the following day returned to my wife and family, to their great astonishment, as well as to that of all my friends in the neighbourhood.

From the kind attention paid to me by Mr. Travers, during his operations, and from being a subscriber and friend to the Eye Infirmary, (an institution which I much approve, and shall ever encourage,) I called upon Mr. Travers, three days after my return, (seventh after the operation,) in order to shew him the wonderful success of your operation, and with the intention of explaining to him the difference between your operation and instrument to his; being then convinced, as I still am, that, had he performed *five* times *five* operations, in the manner he had done upon me, the result would have been equally unsuccessful.

The reception, however, which I experienced from him, was such, that the object of my visit was quite frustrated, by what I considered an unprovoked and unmerited abuse, both of you and myself, unworthy of further mention; but some part, however, I think myself bound in honour and gratitude to you to state to the world, my having been, I am fully persuaded, the chief and innocent cause of those attacks, which you have experienced from the London Eye Infirmary. This opinion is confirmed by what has come to my knowledge from other quarters.—He, after declaring that you could not have cured me by one operation, had it not been for his previous ones, said, that other patients had left him, and gone to

you, in a similar manner, before; " but, now that his mind was made up to take " public notice of him, (Sir William Adams,) he should do so, and that too in a " way which he little expected, and which he (Mr. Travers) would do without " delay." He then requested me to call upon Dr. Farre, to state to the Doctor what I had just stated to him; but his unexpected behaviour did not merit an acquiescence on my part to comply with his wish, and I therefore declined doing so.

The *Special Report of the London Eye Infirmary was soon afterwards sent to me.* This publication brought strongly to my recollection the threat of " taking public notice of you in a way you did not expect."

That I had a right, and without any breach of delicacy to Mr. Travers, to form my own determination who should perform a *sixth* operation after five had failed, is a fact so obvious, that I merely mention it in order to shew the folly which *professional feelings* will sometimes drive even men of ability to commit. That I have waited and borne every part of Mr. Travers's treatment with patience is also known by my having remained under his care for nearly three years, during which long attendance I in consequence lost a very lucrative appointment (a fact well known to the gentleman who first mentioned your name to me;) and when it is considered that I had a wife and five children wholly dependent upon my personal exertions for support, no reasonable person, I think, can throw any other blame upon me, than for having remained so long under Mr. Travers's care as I did.

With respect to yourself, I solemnly declare that I sought your advice, and in common with other patients applied to you at your house, and that you never in any conversation attributed a want of skill to Mr. Travers, but blamed his mode of operating; and, further, that had you declined operating upon me, (which you conscientiously could not do), the recollection of my sufferings at, and after the last operation of Mr. Travers had fully determined me never again to submit to it.

The above narrative is to the best of my recollection minutely correct, which I am ready to attest under the most solemn obligations; and in giving this to you, to employ in any manner you may think proper, I conceive I am only doing what honour, justice, and gratitude, demand of me.

I am, dear Sir,

Your obedient humble servant,

To Sir William Adams. THOMAS CORLETT.

LETTER II.

MY DEAR SIR,

I am more sorry than surprised at the groundless accusations that have been brought against you in print, for your conduct towards your late preceptor, Mr. Saunders. These attacks, which are obviously set on foot by jealous and interested individuals, you must expect. I incline to think it would be wisest to take little or no notice of them. They are the natural consequence of successful merit, and in that light I conceive they must in general be regarded.

During all the time you were oculist to the West of England Eye Infirmary, I

know you habitually embraced every opportunity both in public and in private, in print and in conversation, to extol the professional merits of Mr. Saunders, and to acknowledge your obligations to him. This I recollect distinctly, both during his life-time and after his decease; as also that I once or twice hinted to you there was no necessity for your bringing it forward on every occasion, and repeating it so very often. Of course the charge now brought against you, must appear to me one of the most extraordinary that your rivals could have thought of.

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I remain invariably,

My dear Sir,

Most truly yours,

SAMUEL FREDERICK MILFORD.

Of the importance of my mode of practice to the welfare of the army, I shall venture to assume that there can be little doubt. The granulations already so often, but never, I trust, unnecessarily mentioned, it is now generally known and admitted, cause the frequent relapses which are observed to occur, when the patient has been infected with the Egyptian ophthalmia, and account for the difficulty formerly experienced in eradicating the disease, when it had once found its way into a regiment. By these frequent relapses, the infectious principle is generated *de novo;* and, as I have been informed from official authority, twelve months since, there were at that period 4,300 men who had been dismissed the service blind from this disorder, upon pensions. From the great increase of the disease within this period, in that part of the British army stationed in France, as well as from the number of troops which have been since disbanded, it is not improbable that the number of ophthalmic pensioners is increased to 4,500. Allowing one shilling per day, or 18*l.* 5*s.* per annum, for each man, which calculation is admitted to be within the sum paid;

(a private, blind in both eyes, receiving 1*s.* 3*d.*; a corporal, 1*s.* 8*d.*; a serjeant, 2*s.* per day,) it will stand thus:—

£4,500	
18	
36,000	
4,500	
81,500	
1,125	The Extra five shillings.
82,625	
5000	Artillery pays this amount by official returns.
87,625	
5,000	Pensions to Officers in the Army and Artillery.
£92,625	The total amount paid out of the national purse.

Thus then the enormous sum of *ninety-two thousand six hundred pounds* is paid annually out of the national purse, to soldiers who have been blinded by the dreadful pestilence in question.

From my success in the cure of *seven* out of *eight* of these very pensioners which was fully proved by the Report of the cases, officially submitted to my care in the third and last trial of my practice*, and upon which cases the opinions of the Ophthalmic Committee were founded, there can be but one opinion of the wisdom and humanity of adopting the measures which I have proposed.

Waving every consideration of humanity, it surely is an object, of great importance, in point of *national economy*, that the expenditure in pensions should be diminished. I have at the present moment an ophthalmia soldier under treatment, a young man, who, having claimed the right of pension for blind-

* See page 31 of this Letter.

ness, was placed under my care by order of Lord Palmerston. By my mode of treatment, he was enabled to read small print to his Lordship within seven weeks; his cure will save to Government 18*l.* 5*s.* per annum, for the life of the patient, and his maintenance, had he been in a military hospital, would not have exceeded 5*s.* 3*d.* per week. Similar instances of my perfect and rapid success in cases, where the eyes have not been entirely destroyed, have very frequently occurred since I began my practice in Exeter, in 1809, immediately before my correspondence with Mr. Saunders*.

In respect to making my practice known to Government, a measure originally suggested to me by Mr. Russell and General Thewles, it may be said, that had I then published it, every advantage would have been derived which I myself could have accomplished had an ophthalmic hospital been established for the cure of the pensioners. To such a conclusion I have to answer—*First*, that, I was prevented from publishing, in consequence of Mr. Saunders's disinclination to have the practice in question made known except by himself.—*Secondly*, That a copy of Mr. Saunders's posthumous work, describing the granulations of the eye-lids, and proposing a mode for their cure, had been *officially presented* to the late Army Medical Board; agreeable to a resolution which was passed at the London Eye Infirmary. Nevertheless, as already stated, when I was first referred to that Board

* The patient Frost, who gave rise to this correspondence, immediately lost is pension of 22*l.* 15*s.* per ann. in consequence of my having cured him.

by the Adjutant-General, some time after Mr. Saunders's posthumous work had appeared in 1811, and ventured to assert the practicability of curing the granulations of the lids, together with the opacities which had been caused by them, occasioning blindness, I was treated with ridicule, and even insult, by the late Director-General, until I demonstrated, by producing patients whom I had *actually cured*, the truth of my pretensions, and then the conviction of his former erroneous opinions, induced him repeatedly to acknowledge, that he was not aware of the general existence of the form of disease in question; in fact, that he knew nothing of the nature and seat of the granulations, till he saw me evert the upper eye-lids, an operation which he declared he had never before witnessed. Nay, it was afterwards asserted to me, by the surgeon of the York Military Hospital at Chelsea, that any promise of removing the opacities of the cornea, would be in direct contradiction to every established pathological principle*.

Here then it must evidently appear, that if I had not *absolutely proved by my own practice*, the possibility of curing them, any publication of mine, would have been as unnoticed as that of Mr. Saunders.

As already stated, my practice was immediately adopted

* The invariable language held to me by every army surgeon, with whom I conversed on this subject, during the first trials of my practice, was, that my curing Parsons would equally convince them of its efficacy as the cure of any number of cases. The opacities in this man's eyes were so dense and extensive, that I was dissuaded from selecting him by the late Director-General, whose candour upon this occasion induced him to declare, "it was too bad a case for a fair trial of my practice." After his vision was sufficiently restored for every purpose of life, he was accidentally met by the Director General, who, the patient informed me, would scarcely believe him to be the person whom he, and the medical officers at York Hospital, had so confidently pronounced incurable.

throughout the army; patterns of the instruments which I employed were given to the surgeon of York Hospital, as copies for the army instrument-makers. My practice was also recorded fully and minutely in the journals of that establishment, where I had first operated in the presence of a great number of army surgeons, and my treatment in every respect was officially forwarded to the surgeons of the different Ophthalmic Depôts throughout the kingdom, for their general adoption.

I have also learnt, from several of the pupils of the London Eye Infirmary, that, *even in that institution*, my practice is preferred to that of Mr. Saunders, the *knife* being now substituted for the *scissors*, to remove the granulations; and the *solution of alum* for the *solution of caustic*, the latter application having been found generally to excite so very severe a degree of inflammation in the eye, when injected upon the raw surface of the internal membrane of the eye-lids.

I published the *emetic practice* in 1813, immediately after I was assured of its efficacy. Thus humanity has not suffered by a delay on my part to communicate my practice; while it cannot be denied that the perseverance with which, for the last five years, I have urged the expediency and necessity of the proposed measure, has caused a degree of attention to the subject which no publication of mine could have excited.

This perseverance produced the *third* trial of my practice, in 1814, and the formation of the Ophthalmic Committee, to witness and report upon it.

The opinions given by this Committee, upon its nature and efficacy, as contrasted with that of Mr. Saun-

ders, having, as already stated, been officially delivered to the Commander-in-Chief, he was pleased, with the Secretary at War and the Adjutant-General, to inspect the patients, upon whom the trial had been made, at the Horse-Guards; where I attended to explain the nature of the disease, and the practice for its removal. His Royal Highness humanely, and condescendingly, inspected the men's eyes, and was so perfectly satisfied with the result of his inquiries, that he was pleased most graciously to express to me, his entire approbation of the success of my efforts; in which sentiment of approbation, he was joined by the Secretary at War, and the Adjutant-General.

In consequence of this satisfactory trial, as well as of the proofs previously adduced of my general success, it was the determination of the Commander-in-Chief, in conjunction with the Secretary at War, and the Secretary of State, for the Home Department, to make a simultaneous effort, to exterminate the Egyptian ophthalmia, not only from the Army,but also from the kingdom. This latter determination, arose from the communications I had previously held with Mr. H. Addington, (at the instance of a Baronet, whose grandson's eyes I preserved from the destructive effects of this pestilential disorder, which he had caught at a private school, where several gentlemen's sons lost one or both eyes from it,) who did me the honour personally to assure me, that Lord Sidmouth, so entirely approved of the plan which I had submitted, for the *total eradication* of the disease in question, that he had actually spoken to a distinguished Member of the House of Commons, to bring the subject before the notice of the

Legislature*. This measure was deemed necessary, from the frightful extent to which the ophthalmia had propagated itself among *all classes of society*, in consequence of the dismissal of so many soldiers from the service, labouring under the third, or granular stage of the disease, before its seat and nature had been explained by me to the Medical Department of the Army.

It appears, also, that only a few months afterwards, the ophthalmia burst forth with such violence in that part of the British Army of occupation in France, that, for more than eight months, there were from 150 to 250 patients, and upwards, constantly in an ophthalmic hospital established in Cambray, during which period scarcely a soldier belonging to the battalion of the Coldstream Guards, quartered there, escaped its pestilential influence in a greater or lesser degree†.

The practice pursued in the army for the cure of the Egyptian ophthalmia, previously to the adoption of mine, was very large, and frequently repeated abstractions of blood. From a statement in a note contained in Dr. Vetch's valuable treatise, already referred

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* About this period I had the honour of an interview with that enlightened Philanthropist, Mr. Wilberforce, respecting the subject in question. He fully concurred with me in opinion as to the expediency of adopting some legislative measures to eradicate the disease in question, before it became too deeply rooted to admit of doing so; and even intimated a disposition to interfere in the investigation himself, had he not been deterred by indisposition and by previous Parliamentary engagements.

† I have received this information from two sources, of such undoubted authority it may be considered as *official*.

to, it appears, that it was not unusual to take as much as three hundred and sixty ounces (or thirty pounds) of blood from the same patient, notwithstanding which active practice, according to a statement made by Mr. Peach, the surgeon of the 52d regiment, in which this practice originated, and was most extensively pursued, that regiment lost within the first year fifty men blind in both eyes, and forty more blind in one; and the disease could not be conquered for upwards of two years and a half, during which period **1341** cases (including relapses) occurred.

I now very particularly request my readers to refer to the St. Pancras Report, page 41, of this Letter, in which it will be seen, that by the adoption of the *emetic practice*, instead of the large bleedings, I succeeded in curing all the acute cases of the same disease in a "few hours" without the loss of a drop of blood; by which means that malady was effectually checked within a month or six weeks, which had resisted for upwards of two years, the utmost efforts of that eminent and skilful oculist, the late Mr. Ware. It will also appear, that by removing the granulations, which were found to exist in every patient who had been attacked with the disease, for any length of time, (but which previously had been wholly overlooked, thereby causing the difficulty of its eradication,) the malady was entirely banished from the work-house, not *one* case of failure having occurred in the treatment of either of its stages, as officially attested by the Gentlemen composing the House Committee, who frequently inspected the patients that had been submitted to my treatment.

Hitherto I have considered the subject merely in a

financial point of view, and as far as it respects the effective state of the army ; but there are other views to be taken of it, which humanity loudly calls on us to notice. Of all the painful and distressing complaints to which the human eye is subject, the Egyptian ophthalmia is unquestionably the most severe. The anguish produced by it I have myself felt, and can therefore speak from personal experience ; and I have repeatedly heard army surgeons declare, that they have seen the most brave and resolute soldiers, evince the feelings of children under their sufferings, and even fervently to pray for a termination of their existence.

As this horrible pestilence was brought into the army, not from any fault of the soldier,—not from the accidental effects of climate, or atmosphere,—but from *specific contagion*, to which he was exposed while in the discharge of his duty, he clearly has the strongest claims upon the humanity of government that an effort should be made for his relief, now that, by the most *undeniable experiment*, it has been proved, that this dreadful malady *does admit of an effectual cure**.

Another consideration which ought not to be disregarded, is that in consequence of the numbers of infected soldiers who have been dismissed from the army, the disease in question has been extensively propagated among all classes of society, and threatens to become as general, and frequent a disease as any

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* The humane intentions of Government in regard to the blind pensioners, are about to be carried immediately into effect, by the calling them up for treatment according to the plan which I have had the honour to propose.

which is now prevalent in the British islands. The ophthalmia was totally unknown in this country until brought hither by the troops on their return from Egypt in 1801. To the circumstance of the general existence of the granulations of the lids having been unknown, many thousands of the general population of the country may doubtless ascribe incurable-blindness, arising from this disease* ; and the mischief so far from decreasing, is daily increasing. The seeds of the pestilence, have been too widely disseminated to expect its natural eradication, and nothing but legislative interference can effectually put a stop, to what threatens to become a *national calamity*. The population at large have therefore an equal claim with the soldier, upon the humanity of government.

In order to give an adequate idea of the contagious nature of the Egyptian ophthalmia, it may not be amiss to state the numbers which have been attacked by it, in a few of the many public establishments of the metropolis, in which it has made its appearance. The surgeon of the Military Asylum states, in a publication on the subject, that during seven years, in which period the disease broke out from time to time, in that establishment there were from 1000 to 1200 children

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* While in Dublin, a few years ago, I was consulted by a country gentleman of large fortune, who had been attacked with the Egyptian ophthalmia a few days before, but he applied too late to obtain relief, I found both eyes irrecoverably destroyed by the violence of the disorder.

One of my first patients on my return to London was a gentleman, who contracted the disease in one eye, while passing through a crowd of blind persons collected at the door of a celebrated empiric, and notwithstanding he was attended by the most eminent oculists of the day, the vision of that eye was entirely lost before I saw him, and he has since repeatedly experienced the most severe sufferings in it.

I have even seen a mother, and two of her children entirely blind from this disease.

attacked with it, many of whom lost one, or both eyes.—In the charity schools of St. James's parish, 170 out of 200 were attacked. In the Welsh Charity School, 70 children suffered.—In St. Pancras workhouse, 200.—In a school at Lambeth, 100.—In St. Martins', St. Giles's, and, as I have been informed, Mary-le-bone work-houses, the ophthalmia has at times prevailed in a great degree. As one proof, among many, of the manner in which it spreads, even from one house to another, I some time since visited a court near Sloane Street, consisting of eighteen or twenty houses, in which there was not a woman or child who escaped its violence during one whole summer*.

In Christ's School, the disease has prevailed for the last two or three years, and it is said, there were between three and four hundred boys attacked with it at the same time, last year†.

In manufacturing districts, the ophthalmia I have been informed, has spread in some instances to a great extent. There is scarcely a populous town in the kingdom, from which patients have not applied to me. And in a number of private schools and families, in and about London, this disease has raged with great violence.

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* I was lately consulted by the family of a respectable tradesmen. The father, mother, five children, and the servant, were at the same time labouring under the Egyptian Ophthalmia, which was caught at an Eye Infirmary, to which one of the children had been sent, for some trifling complaint of the eye.

† I have been consulted by the father of one of these boys, who nearly lost his eyes from the disease in question, which was communicated to him by his son on his return home during the vacation; and he mentioned to me, that the mother of another boy was similarly infected about the same time as himself, who, it was reported had actually lost one or both eyes.

In a letter now before me, written by the assistant-surgeon of a regiment of 800 men, then under orders of embarkation for Spain. He says,

The disease was introduced into the regiment, as I have reason to believe (been informed) by a soldier's child, who brought it from another regiment. When I joined the battalion there were not above twenty patients in the hospital for ophthalmia, but within five months, more than two-thirds of the regiment were attacked; and, notwithstanding every possible effort was made to prevent its spreading, it nevertheless attacked nearly six hundred men, before its contagious progress could be arrested*.

This occurred at the period, when the great effort was made to reinforce the Duke of Wellington's army, consequently the valuable services of this regiment were lost, during the remainder of the Spanish campaigns, as I have since learnt it was nearly two years before the disease was entirely got rid of.

It will naturally be asked, whether it be possible, or probable, that any effectual remedy, can be applied to so great an evil. It is seen by the official documents contained in this letter, that in every instance where I have been called upon to treat this disease, since 1809, my practice has been *invariably successful;* and surely it will not, in candour, be deemed presumption on my part to suppose, that it would prove equally so, if it were tried upon a general and exten-

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* I am informed it has very recently been again officially reported, that the ophthalmia is "conquered in the army", there being but *very few cases* of it now existing among the troops in France.

It is here seen the extensive mischief which a *single case* is capable of producing; and from the facts already stated, it is sufficiently proved how utterly inadequate the means hitherto employed, have been to *eradicate* the disease in question from the army, however, it may occasionally have been checked, or "conquered." The plague at certain seasons of the year, is not known to exist, in places the most infested with it, but no one ventures to assert, on that account that it is effectually conquered.

sive scale. I therefore, do not hesitate to express my firm belief, that the Egyptian ophthalmia might be totally and permanently eradicated from the army, and from the kingdom, by the adoption of those plans which I have had the honour to submit to his Royal Highness the Commander-in-Chief, the Secretary at War, and to the Secretary of State for the Home Department.

Two objections may perhaps be urged against the execution of the latter part of this great undertaking, which I so confidently assert to be practicable.

First.—That the enactment of the legislative measures, necessary to carry my plans into effect, might infringe upon the liberties of the subject. Secondly, that from the highly contagious nature of the disease, it would still continue to disseminate itself in the army, and among the general population of the country, before by any effort, it could be entirely eradicated.

In reply to the first objection I will state, that no legislative enactment will be required, which is not fully recognised in, and acted upon, by the quarantine laws with greater severity, than would be necessry to exterminate the disease in question; whose contagious power and destructive severity, have in many instances been as fatal, as far as respects the *vision* of the sufferers, as the plague or yellow fever have been to the *lives* of the persons attacked with those dreadful pestilences.

The arguments which were successfully employed against the general inoculation for the cow-pox, in no respect applys to this measure; for although forcing a parent to inoculate his child with a disease, the safety and efficacy of which he doubts, would be to

exercise a degree of tyranny over the opinions and feelings of the subject, which the spirit of the English constitution could neither authorize or countenance, yet surely to prevent any person from spreading the plague or any other fatally infectious disease among the general population, cannot possibly be deemed an encroachment on the liberty of the subject.

I answer the second objection, by stating that one of the chief means to be employed in the extermination of the ophthalmia, would be to afford such necessary information to every professional man throughout the kingdom, as will enable him to treat the disease in a manner to destroy its infectious principle.

This I pledge myself may be done with the greatest certainty of success; and from the excrutiating sufferings which attend the acute form of the Egyptian ophthalmia there can be no question, but those afflicted with it, would, without the necessity of resorting to compulsory measures, gladly and immediately apply for relief, wherever and in whatever manner they were certain of obtaining it.

Very little expense would attend the execution of the plan which I had the honour to submit to Lord Sidmouth, and which met with his entire approbation. This plan is so simple in its nature, and so evidently practicable, that I am persuaded it would be very generally considered by others in the same favourable point of view as it has been by this humane and enlightened Statesman.

I trust, my Lords and Gentlemen, I have fully proved by the foregoing relation of facts, and the documentary evidence adduced, that in coming forward as I have done with plans for the total eradication

from the army and the kingdom of a newly-imported disease, which, from not having been understood, and from having been neglected, threatens to become a national calamity, (equally with the small-pox or venereal disease, which have been also imported into this country,) that I have disinterestedly endeavoured to promote the interest of my country, as well as that of universal humanity; and that in doing so, no part of my conduct, either moral or professional, has, in any degree, merited censure, still less any rancorous or malignant feeling.

It is with a considerable degree of reluctance, that I revert to the hostile conduct of the medical officers of the London Eye Infirmary, by mentioning an attempt which was made to injure me in the opinion of some of the subscribers to that Institution, immediately after the death of the late Mr. Saunders. The senseless absurdity of this attempt is so evident as to render it unworthy of notice, were it not that a publication of the falsehood, has been held out as a threat, if I replied to the Special Report of the London Eye Infirmary; its authors well knowing, a reply, if made at all, would fully expose their disgraceful misrepresentations. I have learned that it was actually sent for insertion (together with a copy of the Eye Report), to whet the critical acumen of one of the editors of a Medical Journal, the justice of whose criticisms I shall investigate in the Supplement to this Letter; but even this editor thought the accusation too contemptible to be admitted into the pages of his Journal. I must bring my readers acquainted with the circumstances

which led to this unprovoked attack, in order that they may understand the full extent of its object.

It has been proved by the renewed and friendly correspondence between me and Mr. Saunders, and by the conversation respecting me, which took place a few days only before his death, (detailed in Mr. Milford's letter, page 15,) that he regarded me to the last with respect and affection. I therefore heard with the utmost surprise, within a few hours after my arrival in London, that his colleagues at the Eye Infirmary had expressed hostility towards me. I was assured, by a mutual acquaintance, that to my success at Exeter this might be attributed ; a success which had been spoken of by them in a manner, to occasion, at times, unpleasant feelings, even to my deceased friend and preceptor. The information of this hostility induced me to request Mr. Milford's brother, a warm supporter of the London Eye Infirmary, to negotiate for me, with Doctor Farre, a business in which I was then much interested.—It was this :—Mr. Saunders, eleven months before his death, had announced in one of the Annual Reports of the Infirmary, and which was circulated all over the kingdom, his intention, shortly to publish a work which would communicate generally to the profession, those improvements he had already imparted to me. The following are his words :—

" In addition to the remarks in the last Medical Report, which I had the honour of submitting to your consideration, permit me to add, that my process for curing the cataract in children, together with other observations relative to the eye, which *I am about to publish as soon as the necessary arrangements can be made*, has been freely communicated to *an individual ;* and the ample scene of experience which this Infirmary affords, opened to his view, from a disinterested wish to promote his

professional object. Mr. *Adams* has since settled in Exeter, and there established a charity on the model of this Institution," &c.

Mr. Saunders died before this task was completed; but I knew that the work was in a considerable state of forwardness. After his death, it was my wish to have become either the editor, or the joint editor of his posthumous work. Knowing that I was in fact the legitimate successor to Mr. Saunders, none of those practising as oculists, having ever, even seen him operate on cataract, I was persuaded, that by adding to it, in notes, the result of my own experience, I should materially increase its value and public utility; and, also, having it then in contemplation to settle in London, which I actually did the following year, I conceived, that it would introduce me to the profession, and the public, as the confidential pupil and friend of that eminent surgeon, whose loss was so generally and so justly deplored, and, consequently, tend to give me professional reputation.

The precise nature of this proposal is explained in the following letter, with which Mr. J. Milford has politely favoured me:—

DEAR SIR,

In compliance with your request I state the substance of the conversation at your interview with me in 1810, relative to the transactions at the London Eye Infirmary, in consequence of the death of Mr. Saunders. I perfectly recollect, on your arrival in town, for the purpose of attending the funeral of that gentleman, you expressed to me your desire of being the *editor* of his work, which you understood was in forwardness for publication; stating, that by becoming the *editor* of such work, it would furnish you with an opportunity of introducing notes of your own observations in your practice, and thereby tend to give you professional reputation.

You also stated, that to obtain this permission from Mr. Saunders's widow, or his executors, you would with pleasure present her with £100.

You requested me, in consequence of my having attended meetings of the Governors of this Charity, to communicate your wishes to the *Committee* or *friends* of

Mr. Saunders. I soon after accidentally met a gentleman who had taken an active part in the Charity, to whom having explained your wishes, he intimated to me that the officers of that Establishment, and who had undertaken the entire direction of the concerns of Mr. Saunders, had so much resentment or prejudice against you, that any such proposal would meet on their part with the most violent opposition. This opinion, I believe, I soon after communicated to you, as I do not recollect that I afterwards adopted any measures on the subject of your proposal.

I am,

Yours very truly,

JOHN MILFORD.

London, March 15th, 1815.

To Sir William Adams.

Mr. Milford *did* communicate this opinion to me, and also that he had not taken any further steps in the business. I therefore endeavoured to see Doctor Farre myself, to repeat my proposal in person, and with the intention, if possible, to explain away the prejudices I found he had conceived against me, and which I was conscious of not deserving. On my way, some days afterwards, to his house for this purpose, I accidentally met, at Mrs. Saunders's house, with an acquaintance, a young man who had succeeded me in acting as assistant to Mr. Saunders, and to whom I *mentioned the above circumstances.* I failed in my attempt to see Doctor Farre, but finding Mrs. Farre at home, informed her that I had commissioned Mr. Milford to propose my *editing* Mr. Saunders's work, and requested she would mention my wishes to Doctor Farre.

Shortly after these conversations, I heard from several quarters that the most injurious reports were circulated, " that I had endeavoured to get at Mr. Saunders's notes in order to rob him of his posthumous fame." To prevent further misrepresentations of my conduct and motives, I therefore addressed to Doctor Farre the following letter, explanatory of the nature of

those propositions, which I had requested Mr. Milford to make.

(COPY.)

February 28, 1810.

SIR,

I AM strongly urged by my friends, before I leave London, to commit to paper, for your perusal, the proposals I requested Mr. J. Milford to make to you, relative to the unfinished work of my much-lamented friend Mr. Saunders, at which period both Mr. Milford and myself were entirely ignorant of its being about to be published at the expense of the charity. This step they deem absolutely necessary, in consequence of the flagrant misrepresentations of my wishes and intentions that have been circulated. Entertaining the highest possible respect and attachment towards the late Mr. Saunders, I was anxious that his name and character should be handed down to posterity with every possible mark of deference and respect, due to his superior talents and acquirements, and that his widow should be benefitted to the utmost, by his well-merited professional reputation.

Impressed most warmly with these sentiments, I requested Mr. J. Milford to state my willingness to co-operate with you in any manner you might consider the most conducive to fulfil those intentions ; that Mrs. Saunders should, as a matter of course, receive all advantages arising from the publication of the work—in addition to which I was ready to pay her an equivalent, if her friends expected it, for being permitted to add the result of my observations and experience, either in the form of distinct notes, or an appendix, which I conceived would have added both to its value and public utility. This proposition I did not deem either improper or presumptuous ;—first, having enjoyed the *peculiar advantage* of his unlimited confidence in his modes of practice ;—secondly, having extended the principle of his operation for cataract, to the cure of that disease complicated with closed pupil*. The alteration I have made in the needle he was in the habit of employing while I was his pupil, and which I communicated to him, he seemed to approve, by his having, as I have been informed, latterly adopted it. Indeed Mr. Saunders most liberally admitted, in one of his letters to me, that it was well adapted to execute the principle of his operation, but the fear of its breaking made him hesitate to use it, which I endeavoured in two or three subsequent letters to do away with, by assuring him I used no other kind for the last twelve months. Also the trials I instituted to ascertain the best method of treating those persons afflicted with the secondary symptoms of the Egyptian ophthalmia, I consider of some consequence ; but I most solemnly declare, that nothing was more distant from my mind, than the wish to raise my own reputation at the expense of his. My astonishment then was extreme, when I found it reported, that I had " endeavoured to get at Mr. Saunders's notes, for the purpose of

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* This improvement Mr. Saunders fully admitted in a letter with which he favoured me, a copy of which is inserted in my work on Diseases of the Eye.

"robbing him of his posthumous fame." No misrepresentation could have been more unfounded, malignant, or unjust.

In the earlier part of my stay in London, I felt the greatest wish to explain myself personally to you on this subject; but the deep-rooted prejudice, which I heard from *every quarter*, you had imbibed against me, rendered such an interview impossible.

Having now, Sir, fairly and fully stated the ideas and feelings that actuated my conduct towards my late friend and his widow, I take my leave of you, hoping that your actions and motives in this business have been, and still will be, guided by the same disinterested purity that has influenced

Your obedient servant,

W. A.

About ten days after the date of the foregoing letter, after my return to Exeter, I received an official communication from the Secretary of the London Eye Infirmary, enclosing, as he stated, "with the individual approbation of a Select Committee of that Institution, in consequence of my letter to Doctor Farre," a communication which, he added, "was made before that Committee," and made by the young man already alluded to, whose name I shall not here expose in print, from a regard to the feelings of some of his family with whom I am intimately acquainted. The substance of his communication was,

"That I had mentioned to him I considered it would be most advantageous to me to have the credit of Mr. Saunders's posthumous work—to have my name inserted instead of his—and to be considered its author!!! That, if these desirable points could be obtained, I would readily pay Mrs. Saunders one hundred guineas, or whatever sum her friends might consider as an equivalent, together with the profits of the publication,—and that I had *requested him to communicate these propositions to a relation of his own, and the most intimate friend of the family, for the information of Mrs. Saunders.*"

It is justly remarked, that extreme malice often defeats its own purpose. The malignity which had thus perverted my open (and certainly not dishonourable) proposition, could only be exceeded by the

senseless absurdity which fabricated a tale, that could surely not impose upon the most credulous, (though, as asserted by the Secretary of the London Eye Infirmary, "when made, it struck all present with horror.")

Can it be credited, that, had I been so unprincipled as to *wish*, to rob Mr. Saunders of his well-earned fame, and "to have the credit of his posthumous work," that I should have had the extreme folly to risk such a disgraceful proposal, which must inevitably blast my own character, to "a friend of Mr. Saunders's family, to be communicated to Mrs. Saunders, and this some days after I had deputed my highly respectable friend Mr. Milford, to communicate my wish either to the *Committee*, or to Doctor Farre, to become the *editor* of the work? Nay, even after I had learned from Mr. Milford the extreme degree of resentment entertained against me by the officers of the Eye Infirmary, —in whose hands I knew Mr. Saunders's manuscript was placed, over which, without their concurrence, I also knew Mrs. Saunders possessed no control,—and who, I was well aware, would have been most happy to strip me of my borrowed plumes, had I dared so unjustly to have decked myself with them?—Is it, I say, within the belief of the most prejudiced credulity, that I should venture to present myself before the public, as the *author of Mr. Saunders's Improvements in Practice,* when the profession were anxiously looking forward for the publication of those improvements, which he had announced to the public, in the Annual Report as already mentioned, and when I had myself made the following Declaration, in a Letter, addressed to the Committee of the West of England Eye Infirmary, dated Nov. 1st, 1809, copies of which,

with the Report, were officially forwarded to the London Eye Infirmary, in conformity to a public Resolution, passed for that purpose, *only four months* before this false and infamous charge was made against me?

To Mr. Saunders I feel more particularly grateful, for having, in the most disinterested and friendly manner, not only allowed me to witness the practice of the London Eye Infirmary, over which he presides, but also for having instructed me in his method of curing cataract, the only one which has been shewn to be applicable, at an early age, to children troubled with that disease. Mr. Saunders has likewise the originality of having first marked the character of inflammation of the iris, and of having pointed out its appropriate method of cure. The discovery of a successful mode of treating those most inveterate and distressing consequences produced by the Egyptian ophthalmia has further been the result of his scientific and unwearied investigations. Upon these highly important subjects, and some others, he has been hitherto prevented by ill health, and numerous professional avocations, from making known to the world the success of his labours. But these, I confidently anticipate, *will shortly be published.*

It were absurd to lengthen a letter already too long, by offering any other refutation of this calumny than the above plain statement of facts. Immediately, upon receiving the Secretary's official Letter I wrote a reply to it, which I requested Mr. J. Milford to deliver to Doctor Farre, and *personally* to acquaint him with the proposals I had deputed him to make.

Mr. Milford, however, seeing clearly in the whole of this attack the hostile spirit which had prevented his applying to Doctor Farre on the former occasion, did not think it worthy his interference, and therefore simply forwarded my Letter without a comment.

Although I fortunately preserved copies of this correspondence, (well knowing the characters of those concerned in the attack upon me,) yet, I confess, until I heard the circumstances already mentioned, I did not conceive, that its authors would have ventured again to

bring forward an accusation, which, from its evident improbability, and obvious motives, could reflect no disgrace upon the individual they attempted to injure !!!

Before I conclude, I think it proper, in order to illustrate the disposition of those who professed such extraordinary solicitude for Mr. Saunders, to take some notice of their conduct to the relict of that gentleman. When those *soi-disant* friends of Mr. Saunders sought to traduce and vilify my character, they professed to be actuated by an anxious desire to serve his widow. But mark their conduct towards her :—

A General Committee of the Subscribers of this Institution met a few days after the death of Mr. Saunders, and determined to mark their warm and grateful respect, for the memory of that excellent man, by publishing his unfinished manuscript, with such further additions as their physician was competent to add, at the expense of the institution, &c., for the benefit of his widow, who, it was well known, had been left in very indigent circumstances.

The following Resolutions, published in the Preface of the first edition of Mr. Saunders's posthumous work, will explain the nature of the proceedings of the Committee upon that occasion :—

That the work intended to be entitled " A Treatise on some Practical Points " relating to the Diseases of the Eye, and particularly on the Cure of Cataract in " Persons born blind," which was in preparation for publication by Mr. Saunders, be published at the expense of this institution, for the benefit of his widow.

That a subscription to the work will be an appropriate mark of the respect en-

tertained by the Governors for the memory of the late Mr. Saunders: as every Governor will thus have an opportunity of associating his name with that of Mr. Saunders, and of possessing himself of a memorial of that estimable man.

That the profits of this work (free from every deduction) be appropriated to the sole use and benefit of Mrs. Saunders.

That a book be opened to receive the names of subscribers, and the number of copies for which they may wish to subscribe.

In consequence of this official invitation, given by a Special Committee of Governors, convened for the purpose of passing the foregoing *liberal* Resolutions, a number of gentlemen, subscribers to the infirmary, who were not professional men, subscribed for copies, some even for half a dozen, believing that, in so doing, they were (in a delicate manner) presenting Mrs. Saunders with the amount of the number of copies taken. By these means, and its own intrinsic worth, nearly six hundred copies of this work (out of seven hundred and fifty, the number printed) were sold, producing upwards of 800*l.* This sum alone would have afforded a comfortable annuity for Mrs. Saunders.

We are, however, informed, by its editor, that—

After active measures were adopted for its publication, at the expense of the institution, the Governors subsequently deemed it more expedient, that it should be published in the usual manner; but, that they carried into effect the principal intention of their Resolutions on the subject, in a manner not less beneficial to the widow.

This was, by granting to her an annuity of 40*l.* "*for and during her natural life*," from the funds of the institution, together with a gratuity of 50*l.*, and the overplus, arising from the sale of the work, after paying the publisher's expenses. So expensive, however, the publication proved, that this overplus did

not amount to more than 120*l.*, the publisher deducting his price for the whole seven hundred and fifty copies*.

Mrs. Saunders, after receiving this annuity of 40*l.* for two years, thought proper to marry her own first cousin, to which step the utmost opposition was (as Mrs. Saunders informed me) previously offered by Doctor Farre and Mr. Battley, who authoritatively threatened that the annuity should be taken from her, if she executed her intention. These gentlemen, however justified they might be in advising, had, certainly, no right to *dictate* upon this occasion. There was no injunction in Mr. Saunders's will, to prevent her marrying again; and, as I have been informed, they were not even executors to that will. She acted contrary to their advice, and that of her other friends, and did marry Mr. Colkett. Doctor Farre and Mr. Battley carried their threat into execution: they formed a *Special* Committee, consisting of themselves and four of their friends, and, without taking the sense of the *General* Committee, which had granted Mrs. Saunders the annuity of 40*l.* "for and during her natural life," they took upon themselves to rescind that resolution, which had been officially recorded on the journals of the institution.

This called forth the following printed appeal to the justice of the subscribers at large.

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* I do not take upon myself any responsibility for the accuracy of the statements I here make, in respect to the money received by Mrs. Saunders for this work, further, than that she personally informed me of them some time since, and that they have very lately been given to me in writing, by her husband, which document I have now before me.

(CIRCULAR.)

London Infirmary for curing Diseases of the Eye,
No. 40, *Charter-House Square.*

SIR,

Understanding that you are a subscriber to the above institution, I take the liberty of addressing you on a subject, which, however painful to my feelings, the strong plea of necessity obliges me to make public; and when I inform you, that I have made several private applications to the Committee to grant my request, without success, I trust that in this public appeal I shall stand acquitted of any desire to interrupt the unanimity so prevalent among the Governors of this infirmary, and that you will approve of my endeavouring, by every fair and honourable means in my power, to obtain what I cannot but consider as my just right, after the sanction given thereto by the subscribers at large. The annuity of 40*l.* per year was granted to me expressly, *for and during the term of my natural life,* as a small tribute of respect to the memory of my late husband, Mr. Saunders, the founder of this charity, and which has been discontinued since my second marriage with a cousin, by which I have again taken the name of Colkett, and become a mother; and I feel it my duty to state distinctly, that if my present circumstances would enable me to live tolerably comfortable without the aforesaid annuity, I would most willingly have withheld this application: but the reverse is the fact, and necessity obliges me to own it.

The case stands simply thus:—

When it pleased Providence to take away my late husband from this world of trouble at the early age of thirty-seven, and when he had reaped little other advantage from his successful practice than the private satisfaction of doing good, it was well known to the Committee in what situation I was placed by his lamented death, and they kindly undertook to finish and publish, at their own expense, (at the expense of the infirmary,) for my use and benefit, a work on Diseases of the Eye, which Mr. Saunders had nearly completed, and would have published, had his life been spared a little longer. The produce of this publication, I had every reason to suppose, would have realized for me nearly 1000*l.*, which sum would of course have been paid down to me, or laid out in an annuity for me, in neither of which cases could I have lost any part of the money by a second marriage. The Committee afterwards altered their original plan, and thought it better to allow me an annuity of 40*l.* per year from their own funds; this was regularly agreed to, and confirmed by a General Meeting of the Governors, and inserted in the Journals of the Establishment in these words:—

"To the widow of Mr. Saunders, for and during the term of her natural life," &c. &c.

It will not be necessary for me to state at length my reasons for changing my situation, nor do I at all think it was a question which concerned the Committee; suffice it to say, that I was not conscious of sinning against any law, human or divine, in so doing, and that I married again, as before stated.

This great crime so offended some of the Committee, that, without pretending

to assign any other reason, a Meeting was called, at which only six gentlemen were present *, and a Resolution passed to rescind the annuity of 40*l.* per year to me, which Resolution will be submitted to the Governors on the 18th instant, for their assent or dissent.

I shall abstain from any personal remarks on the conduct of any of those gentlemen by whose interference the grant was attempted to be rescinded, and content myself with a bare statement of the facts, in the full assurance that I shall not be forsaken on this occasion, and in the earnest hope that you will attend on the day appointed, and join with my other friends in bestowing on me, now that I am actually in a situation to want it, the continuance of this annuity, as originally granted, and which I hope you will not think too much for the eminent services of my late husband, for whose sake alone it was at first given, and with whose opinion with respect to second marriages I was so fully acquainted, that, could he even now speak from the tomb, I am convinced he would not condemn me.

Begging pardon for troubling you so long, and hoping for your kind assistance in this affair, which is so essential to my support,

I remain, Sir,

Your much obliged and devoted Servant,

JANE LOUISA COLKETT,

Widow of the late J. C. Saunders, Founder of the London Infirmary, at No. 40, Charter-House Square, for curing Diseases of the Eye.

45, *Penton-street, Walworth,*
15*th Feb.* 1814.

The result of this appeal in no respect contributed to the relief of the applicant!! The argument attempted to be established by the physician of the infirmary, *who was the chief orator against* the "relict" of his "friend and colleague," was, that the annuity had been given to *Mrs. Saunders*, and that it was then *understood*, if she married again, it would be taken from her.

Her friends successfully opposed this argument:

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* The six gentlemen were, as I have been informed by Mr. and Mrs. Colkett, Doctor Farre, his father-in-law, and his father-in-law's partner; Mr. Travers, Mr. Battley, and their friend, Mr. Sedgwick.

they contended, her " natural life" could not expire on her changing her name by marriage, and that it was the extreme of folly to mention what was " *understood*," contrary to what was *expressed* on the journals of the establishment, in which this Resolution was officially recorded, as any justification for the act which deprived her of her just right.

Doctor Farre then took other grounds. " *He had* " *been informed by the solicitor of the infirmary, that the* " *Committee had no right to dispose of the funds of the* " *charity, in the manner wished for by the friends of* " *Mrs. Colkett.*"

He thus clearly abandoned those very grounds on which himself and his friends (without appealing to the sense of the General Committee of Governors) had founded their right to withdraw her annuity. Any further discussion of the subject, after this assertion, *could not be agreeable* to the adversaries of Mrs. Saunders, and the previous question being moved, a majority of hands broke up the meeting *.

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* It can be no matter of surprise, that there should have been a majority at this meeting in favour of the six Committee Gentlemen. One of them, to my own certain knowledge, went about canvassing the Governors of the infirmary, to attend the Meeting, (which had been convened to consider Mrs. Saunders's appeal,) urging the same arguments which the head of the Committee was afterwards *driven to the necessity of abandoning*.

One of my patients, upon whose veracity I can rely, informed me, that he was so canvassed by a zealous, and, at all times, ready instrument to the wishes of the medical Officers of the London Eye Infirmary. This same gentleman was prevailed upon to write a note to Mrs. Colkett (Mrs. Saunders) two years since, immediately after the attacks made upon me from the London Eye Infirmary, and when their authors expected, from my letter to Doctor Farre, (in which I threatened to expose his conduct to Mrs. Saunders,) that I should make a reply to them. Both Mr. and Mrs. Colkett informed me, that it was intimated in this note, if she withheld from me any papers for which I applied, the infirmary might do something for her.

I shall not further enter into the question of the *right* of Mrs. Saunders to marry a second time. It is apparent she possessed that right, and however much it is to be regretted that she should have so exercised it, it is, nevertheless, equally apparent, that her doing so cannot warrant the cruel severity and injustice, which has since been shewn her by "*the friends and colleagues of her late husband*," who affected to feel such a *tender interest* in her welfare, when they commenced their attacks upon me, although she had, at this period, been wholly deserted by them for two years, and, by their influence alone, had been deprived of this annuity, when she stood most in need of it. During this period, they allowed that unfortunate woman, who, whatever were her faults, was still the "relict" of Mr. Saunders, and should have been so considered by them, to be reduced to such extreme necessity, (before she made her situation known to me, from whom, by her written admissions, she was sensible she merited no kindness,) as for the trifling sum of 50*l.* to part with the copy-right, and unsold copies of her deceased husband's work; nay, even to be obliged to put in pawn the *seal* and *miniature* of that very man, respecting whose "posthumous fame," and the respectability of his widow's conduct as it affected his memory, these gentlemen professed to be so anxious.

They, however, thus afforded to the writer of these observations, the supposed enemy of Mrs. Saunders, and of the well-earned reputation of her husband, the extreme gratification, of enabling her to withdraw from pawn, the above seal and miniature

of his deceased friend, and, sacrificing every petty feeling of resentment,—of contributing to the relief of one, for whom he never professed either friendship or regard, and who, he was well aware, had (probably from misrepresentation) joined the hostile combination, which he has just exposed, with respect to the editing of Mr. Saunders's work*.

As Mrs. Saunders's advocate, I should place her case in the following point of view, I mean upon the basis of *legal right*.

It will be recollected, that the annuity was taken from her at first, without the knowledge or sanction of the General Committee. The great body of subscribers are thus entirely exonerated from the act.

Secondly, the annuity was not a *disinterested* gift of the subscribers of the London Eye Infirmary. It was an equivalent for the sale of her husband's work, *which was her own property*, as his only representative, and over which the managers of that Institution possessed no control; although the General Committee thought proper to order the publication of the manuscript, in such a manner, and attended with such expenses, as their physician should please to incur.

What then would have been the value of this work to Mr. Saunders's widow, if, instead of its having

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* About this period, I made repeated applications to the Commander-in-Chief, through his Secretary, on behalf of Mrs. Colkett, as being the distressed widow of Mr. Saunders, from whom I first took the idea of that practice which was likely to prove so beneficial in the army. It is my intention to repeat this application whenever a favourable opportunity for success presents itself.

been edited by Doctor Farre, my proposals had been accepted, and *I had become the editor?* for which, as proved by Mr. J. Milford's letter, I offered 100*l.* and the proceeds, had I been allowed to have inserted the result of my experience and my improvements.

Some estimate may be formed from this fact, that in the year after the appearance of Mr. Saunders's posthumous work, I published a work on Diseases of the Eye, six hundred copies of which have been already disposed of, and the matter of this work, together with other valuable information, it was my intention to have added to Mr. Saunders's manuscript.

According to Mr. and Mrs. Colkett's statements to me, the following is the actual amount of the sums they have received for the work, *as edited by Doctor Farre*:—

Gratuity.....	£50
Overplus from the sale of nearly 600 copies....	120
Two years' annuity.....	80
Sale of copy-right and remaining copies	50
Total	£300

Having fully, and, as I think, incontrovertibly answered the Medical Officers of the London Eye Infirmary, it may be expected that I should endeavour to account, for the sanction given to their opinions by

the signatures of so many respectable Gentlemen, composing the Committee.

It is not, for a moment, to be imagined that these Gentlemen were influenced by any motive but that which appeared to them, at the time,—perfect justice. The question, however, was *purely medical*, and their decision on it, must have therefore been founded, upon an unlimited confidence in the information afforded by the Medical Officers of their Institution. But, with great deference, I must observe, that a hasty concurrence in information, so derived, could not justify the measure to which it gave birth.

Did these respectable individuals, before they subscribed their names to a publication, expressly and avowedly intended to injure me in my professional, and to stigmatize me in my moral character, pause to weigh the value of that character they were thus about to stigmatize?

Did they examine the truth of the charges they ventured to put forth, with the sanction of their names?—or did they, without such examination, allow themselves to become the instruments of jealous and self-interested Medical Officers?—Did they allow themselves to reflect that the accusations drawn up against me, by competitors in the same line of practice, and submitted to their signature for authentication, might possibly be founded alone in that spirit of intrigue and rancour, which it is so difficult to separate from competition?—

Did they weigh well the injury they were, with easy credulity, about to inflict on an individual who

had never injured them ; but who had endeavoured, as far as his abilities, and the extensive opportunities he possessed, would allow, to render service to humanity, and to our common country, and especially to promote that particular branch of benevolence to which their own attention had been so long and so cordially directed ?—

Did they stop to make any inquiries of Mr. Cline or Mr. Ashley Cooper, who were among the first and most valuable supporters of the London Eye Infirmary; and who, being also Members of the Ophthalmia Committee, must have been perfectly competent to give them every information with regard to my " pretensions as affecting the rights of the Infirmary, and the merits of the late Mr. Saunders ?"

Was it within their knowledge, that the statements, which their signatures were designed to brand with falsehood, stood not upon my own assertion merely, but upon the solemn attestation of a Medical Board, the honour of which is as unimpeachable, as its official character is exalted ?—And could they forget that his Royal Highness the Prince Regent, for the very facts which they were thus incited to falsify, had been pleased to confer on me a distinction of the most gratifying nature,—which was equally unexpected, and unsought for,—but which I am most proud, and grateful to acknowledge ?

Such inquiries and precautions were no less due to their own character than to mine :—and for want of these,—in direct violation of the spirit of the

English laws, they have *condemned me upon a mere ex-parte statement:* and, while they were entrapped into a belief that they were supporting the cause of charity and truth, they were giving the stamp of their sanction to public misrepresentations, and professional intrigue: —to calumnies, which the real authors of them could never have brought forward into public notoriety, much less into public belief, without such auxiliary support; —which, but for the authority of that support, must have been contemned and ridiculed as soon as published, and which, indeed, would never have been deemed worthy of a serious answer.

That the gentlemen who have thus seriously injured me have been misled, I am ready to allow; and that they will regret the part they have thus unwittingly taken, I am as ready to believe.

I doubt not that the Governors at large, will feel themselves called upon to mark their disapprobation of any attempt, to make the proceedings of this excellent institution, an engine for the exercise of private malice, or injustice.

The publication of the "Official Papers" by your honourable body, and my undertaking the eradication of the Ophthalmia from the army, brought into active operation that rival jealousy, and selfish alarm, which existed in the breasts of the Medical Officers of the London Eye Infirmary; and which now assumes every form to injure me.

I had the honour of your highly-valued approbation, when I had the good fortune to deserve it;

and now, when I appeal to your protection, I cannot allow myself to doubt the obtaining it.

I have the honor to be,

My Lords and Gentlemen,

With the warmest sentiments of gratitude

and respect,

Your most obedient humble servant,

WILLIAM ADAMS.

26, *Albemarle-street,*
August, 1817.

APPENDIX.

REPORT of a SPECIAL MEDICAL BOARD, assembled by Desire of the Commander-in-Chief, to take into Consideration the PREVALENCE *of the purulent* OPHTHALMIA *in the* ARMY.

Sir Lucas Pepys, Bart., President.
Sir Henry Halford, Bart.
Doctor Baillie,
Doctor now Sir Gilbert Blane, Bart.
Doctor Moseley.
Everard Home, Esq. now Sir Everard, Bart.
Thomas Keate, Esq.
Francis Knight, Esq.
Henry Cline, Esq.
James Ware, Esq.
J. W. Phipps, Esq. now Sir Jonathan Wallar, Bart.

THE Board having deliberately investigated the several circumstances connected in a general manner with the disease, and having adverted more particularly to those points which appear to have occasioned its late prevalence in the Army, begs leave to submit to the Commander-in-Chief the following Remarks upon it; and, for the sake of perspicuity, it is thought advisable to arrange their observations under two general heads—the Means of Prevention, and the Methods of Cure.

Under the first head, that of PREVENTION, the Board is of opinion,

First.—As the purulent Ophthalmia appears to be communicable principally by means of morbid matter applied to the eyes, one of the most obvious modes by which it may be prevented from spreading, is the immediate separation of those who have caught the disorder from the rest of their comrades and associates. As soon, therefore, as the disorder is discovered to exist in a regiment, the Board is of opinion that the Surgeon, or his Assistant, should daily inspect the eyes of all the soldiers; and if there be the smallest appearance of inflammation in any of them, these should be immediately removed from the rest, and be sent to the Hospital, or Depôt, in order not merely that the disease may be prevented, from being communicated to others, but that proper remedies may be employed, in the most expeditious manner, to arrest its progress in the persons who suffer under it.

Secondly.—Cleanliness, as a means of prevention, is of such high importance, that it cannot be urged too forcibly. In this part of the Report, the Board is of opinion that it cannot object in too strong terms to a practice which has been very commonly pursued in the Army, and in many other confined situations—that of permitting a number of persons to wash their faces, in succession, not only in the same tub or basin, but with the same water. This practice should be peremptorily prohibited in all His Majesty's Regiments, particularly in those where the purulent ophthalmia has prevailed; and, instead of it, the men should be obliged to wash their faces in a running stream, either from a pump or a closed cistern,

under which there is not any receptacle for the waste water; and, instead of wiping the face with a towel common to many, each man should be supplied with one or his own use; and he should be strictly prohibited from lending or borrowing any article of this kind. For greater security in this respect, the Board recommends that those men who suffer under the ophthalmia may be provided with a towel, having a distinguishing mark, such as a coloured border. These marked towels should be kept separate from the rest, and should not be washed by the common washer-woman, but by a person appointed for this special purpose.

Thirdly.—The bedding and clothes of those who have the purulent ophthalmia, are liable to be so much imbued with the discharge that issues from the eyes, as to become a possible cause of communicating the disorder to others. The Board recommends that these be frequently washed and scoured; and as the bolsters and sheets are particularly liable to be thus imbued, the bolsters should be covered with linen cases; and these, as well as the sheets, be frequently and thoroughly washed and cleansed. If this work be properly performed, it does not appear to the Board that these articles need be destroyed. This remark may be applied also to the towels, and to most other things of a similar kind that are employed by the nurses and patients. Sponges, from their porous texture, furnish an exception to the above rule; these it may be better to destroy than to return into store.

Fourthly.—The Board does not presume to offer any opinion on the choice of Depôts for persons who suffer under this disorder, though the subject has been brought before it by a Member of the Army Medical Board. This Board has not sufficient local information to guide its judgment on the subject; and, as it seems intimately connected with general military arrangements, the Board leaves it to the consideration of more competent Military Authorities.

Under the second Head, which relates to the METHODS of CURE, the Board observes, that it is impossible to offer directions that can be applied to all cases of this disorder. The purulent ophthalmia prevails at different times, and in different places, with very different degrees of malignity; and even in the same place, and at the same time, some persons suffer under the most violent symptoms of the disorder, whilst others have it in a comparatively mild form. This variety does not depend on any known difference in the constitution of the patients, some, who were weakened by previous indisposition, having had both the inflammation and the purulence more severely than others who, previous to the attack of this disorder, were in high health and strength. Without directing the practice therefore in each individual case, the Board presents the following observations on a few of the principal remedies that are likely to be required.

First.—On the necessity of taking away blood. When this disorder attacks persons who are strong and plethoric, there cannot be any doubt relative to the propriety of taking away a large quantity of blood; and this in general will be done most speedily, and most effectually, by making a large orifice in a vein in one or both of the arms. When the disorder attacks those who are weakly and debilitated by former illness, if the inflammation be accompanied with a great tumefaction of the conjunctiva, and a profuse purulent discharge, together with much pain both in the head and eyes, the necessity of taking away blood appears, also, to be so strong, that the Board does not think it can be postponed, without imminent danger to the patient's sight; but the quantity to be taken away need not be so great in this as in the former instance; and perhaps the bleeding may be performed most advantageously, either by opening the temporal artery, by cupping on the temples or nape of the neck, or by applying six or more leeches on the temples or forehead.—Sometimes, after taking away blood from the arm, it becomes necessary to repeat the operation more than once, and, occasionally, to apply leeches many times in succession. In some instances, it has also been thought useful to scarify that part of the conjunctiva that lines the inside of the eye-lids; but this operation should be performed with a very sharp lancet; and it seems more advisable in the subsequent stages of the disorder than at the time the inflammation is in the height of its violence.

Secondly.—When the purulent ophthalmia pursues its course in the most malignant manner, it usually terminates in a rupture of the cornea; and this accident too often involves the pupil, and much injures, if it does not destroy, vision. The Board is therefore of opinion, that as soon as the symptoms justify an apprehension of this event, a puncture should be made on the side of the cornea, in

order to discharge the aqueous humour*. This puncture may be made by a careful person, without any danger, either with a spear-pointed lancet, with the knife used to puncture the cornea in the operation of extracting the cataract, or with an instrument which resembles a common couching-needle, but is somewhat larger, and has a groove passing through it longitudinally, through which the aqueous humour escapes as soon as the point of the instrument has penetrated into the anterior chamber. Whichsoever of these instruments be employed, it should be introduced parallel to the plane of the iris, that it may not wound this membrane; and it should be withdrawn as soon as the aqueous humour has been discharged.—Sometimes, in the purulent ophthalmia, matter is rapidly formed in the aqueous humour behind the cornea; and in such a case the operation of discharging it becomes indispensable; but for this purpose the knife used to divide the cornea in extracting the cataract is more proper than either of the other two that have been mentioned.

Thirdly.—Blisters may be applied with advantage in almost every stage of the disorder; but the Board is of opinion, that, during the violent state of the inflammation, they will be more beneficial between the shoulders than nearer to the eyes. Issues made behind the ears, by means of caustic, may also be useful in the subsequent stages of the disorder.

Fourthly.—During the time that a thick purulent matter issues profusely from the surface of the inflamed and tumefied conjunctiva, it should be washed away once, at least, in every hour. This will be most effectually performed by injecting a medicated liquor between the eye and the eye-lids, by means of a blunt-pointed syringe. The liquor should be propelled with sufficient force to bring away the matter, but without suffering the end of the instrument to touch the eye, and without making any pressure on the globe itself, either with the syringe or the finger. A solution of the Sulphas Cupri, (such as the mixture of one part of the lotion commonly denominated Bates's Camphorated Vitriolic Lotion, and six or eight parts of water,) a solution of the Cuprum Ammoniatum, (formerly called Aqua Sapphirina,) and the Liquor Plumbi Acetati dilutus, may be classed among the best applications in this state of the disorder. It is only necessary to give a caution against using these or any other applications in such a degree of strength as to pain the eye during the active state of the inflammation. In general, it is believed, it will be most useful to apply these lotions cold; but if the coldness be particularly ungrateful to the feelings of the patient, (which is a rare occurrence, except in severely cold weather,) they may be applied warm.—Sometimes, and especially when there is considerable pain in the eye, advantage has been derived from holding the eye, between the times of applying the lotion, over the vapour of hot water,—or from fomenting the eye by means of a sponge, or fine flannel, either with a hot decoction of poppy-heads, or with a mixture of one part of vinegar, and ten or twelve of hot water.

Fifthly.—The Board is of opinion, that the bowels should be kept in a laxative state during the violence of the inflammation, and saline purgatives appear to them preferable to those that are more stimulating.

Sixthly.—In the early stage of the purulent ophthalmia, the use of alterative medicines seems wholly precluded. In its subsequent progress, various kinds of alteratives, and also of tonics, may become useful, according to the peculiar constitutions of the patients; but the selection of these must be left to the discretion of the medical men who prescribe them.

Seventhly.—A total abstinence from animal food and fermented liquors, and a very low diet in every respect, are absolutely required, so long as the violence of the inflammation continues. A more nutritious diet may be afterwards allowed; but the change should be made with great caution, and the indulgence be immediately prohibited if it appear to occasion any increase of the inflammation.

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* This is the mode of practice to which I adverted as being "*especially different*," from that recommended in my essay perused by the Ophthalmic Committee, in 1814, and reported upon by Sir Henry Halford, as being that "which is generally adopted by the profession."

Eighthly.—It does not appear that injury has been derived from the access of cold air, in cases of the purulent ophthalmia, when patients have not been exposed to partial currents of it. But manifest harm has been done by keeping them in hot rooms, and confining them long in their beds.

Ninthly.—As instances have occurred of the ophthalmia having been produced by the application of acrid substances to the eyes, it may be proper to remark, that neither the tumefaction of the tunica conjunctiva, nor the quantity of matter secreted by this membrane, are so considerable, when the disorder is produced in this way, as they are when it is occasioned by the contact of purulent matter.

By desire of the Board,

(Signed) L. PEPYS, President.

S. REED, Secretary.

London, 5th Feb. 1810.

GENERAL ORDERS.

Horse Guards, 10th April, 1810.

IT is the Commander-in-Chief's Command, that the accompanying "*Report of a special Medical Board, which has been assembled to take into Consideration the Prevalence of the purulent Ophthalmia in the Army,*" shall be circulated for the information of the Commanding Officers of Regiments, and for the guidance of all Medical Officers belonging to the Army.

By Command of
The Right Honourable the Commander-in-Chief,
HARRY CALVERT,
A. G.

SUPPLEMENT.

SUPPLEMENT.

HAVING, as I trust, amply refuted the calumnies, which my conduct with regard to the Egyptian ophthalmia has excited against me, I am next called upon to expose the animadversions of the editor of the Edinburgh Medical and Surgical Journal, with respect to your publication, entitled "Official Papers," &c.

This Report was placed in the order of criticism in that journal, under the following head:—

"Official Papers, relating to the Operations performed by Order of the Directors of the Royal Hospital for Seamen at Greenwich, on several of the Pensioners belonging thereto, for the purpose of ascertaining the general Efficiency of the new Modes of Treatment practised by Mr. Adams, for the Cure of the various Species of Cataract, and the Egyptian Ophthalmia. London, July 1814, pages 21."

Thus, the words conspicuously printed on the title-page, "*published by Order of the Directors*," were entirely omitted. In the Table of Contents, the Report was simply entitled, "Mr. Adams on Cataract," &c. The editor's criticism was as follows:—

We cannot praise Mr., (now Sir William) Adams. We can conceive no reason, not unworthy a member of a liberal profession, for keeping secret new modes of treatment, practices, or operations, after their efficiency is ascertained, and when, by disclosing them, he could confer a benefit on the human race. If we were not well acquainted with the History of *Nostrums*, we might be inclined to think the evidence here laid before us conclusive: but we shall fear some mistake or deception, until the practices shall be confirmed by their success in other hands than the Knight's; for it is the operation, and not the operator, we look to; and until, by the disclosure of the *secrets*, we shall be enabled to judge of their merits scientifically. —*Edinburgh Medical and Surgical Review*, July 1814.

In reply to this very unwarrantable and offensive statement, the medical officers of Greenwich Hospital, sent the following letter, for insertion in the next number of that Journal :—

GENTLEMEN,

A statement having appeared in the last number of your valuable journal, charging Sir W. Adams with keeping secret his improved operations on the eye, we consider it but an act of justice to the individual in question to state, that his uniformly open and liberal conduct towards us, since his appointment as operator for diseases of the eye to the Royal Hospital, has been such as to merit our warmest esteem and respect. That, so far from his manifesting any disposition to operate in private, we have been, and still continue, by his permission, in the constant habit of inviting our medical friends to witness *all operations* performed upon the pensioners placed under his care; and also, that we have generally observed, on these occasions, *numbers of the profession in private practice* present, invited by Sir William Adams himself, to whom he has, in our presence, *explained the nature of the different operations they had seen him perform, with the same minuteness and candour, which, in every instance, we have ourselves experienced from him.* Not doubting you will give the earliest publicity to the above communication,

We are, &c.

R. ROBERTSON, Physician.
B. M'LAUGHLIN, Surgeon.
M. S. KENT, Apothecary*.

This letter contains a complete refutation of the editor's charge. It shews that I had *not* "*kept secret* "*any of my new modes of treatment, practice, or opera-* "*tions,*" consequently, that I had no "*secret*" *to disclose;* and this letter, however unwilling to do so, this editor could neither refuse to insert in his Journal, nor decline to notice. It accordingly appeared in the number for January 1815, page 92, accompanied with the following observations :—

We sincerely rejoice that we were mistaken in the opinion we had formed of Sir William Adams: but, while we do justice to his character, we must vindicate our

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* See the Edinburgh Medical and Surgical Journal, for July, 1814.

own. With Sir William Adams we have no personal acquaintance; we formed our opinion of him entirely *from his writings*. We have again perused "the official papers" with the greatest attention, and we are convinced that every impartial person, judging from them, would form *nearly* the same opinion as we did. *The whole publication still seems to us solely calculated to serve the private interests of Sir William Adams;* for it conveys no other information to the public, than that he is the most scientific and successful of all oculists, and has invented peculiar and appropriate instruments, and modes of operation for some of the worst diseases of the eye. We find, indeed, that he personally explained to the Board the nature and effect of his several operations; and that he communicated to the medical officers much valuable information and instruction relative to diseases of the eyes. But, in this very widely circulated pamphlet, there is not only no communication to the profession at large of the nature of any of his discoveries; but from *several passages* we very naturally concluded, that no early communication of the kind was intended. We appeal confidently to the two following paragraphs; one taken from the report of the medical officers, the other from his own letter to the Board:—

"In addition to the gratifying contents of the second Report, we think it our duty to state, for the information of the Board, that Sir William Adams has discovered a mode of curing the Egyptian ophthalmia, which has been successfully practised upon several of the Pensioners, some of whom had been blind for three or four years, and given up as incurable by the most eminent oculists then in London. The communication that this destructive, and hitherto intractable, disease admits of cure, we conceive will be gladly received by the Board, and the promulgation by Sir William Adams of this important discovery, be considered as a great *national desideratum*.

"Where the cataract is too hard, and solid, to admit of this immediate division, I do not attempt, as was my former practice, to effect its absorption by a frequent repetition of the operation; but I at once extract it. This, however, is accomplished by a process *totally different* from that I have felt it a duty to deprecate; a process which I must claim to be novel, and which happily attains the highly important desiderata which had been hitherto considered *unattainable*, while it obviates the many causes of failure which rendered the usual mode of extraction so generally unsuccessful. From the principle upon which it is founded, and the favourable results of its termination during the last two years that I have extensively practised it, I feel myself warranted in asserting that it possesses the utmost degree of excellence which is *possible* for extraction to arrive at, and that its general success will prove nearly as great as the operation for the removal of the soft cataract. *To deter other persons from claiming it as their invention, or anticipating me in its communication to the public (as was the case with my instruments and operation for the cure of the soft cataract, and my successful revival of an obsolete operation for artificial pupil), I have requested Mr. M'Laughlin to record on the hospital books the different stages of this operation, as he has seen me perform it on several of the pensioners.*"

The Editor, in his observations, fails equally in doing justice to my character, and in vindicating his own. That he was, as he professes, *sincerely rejoiced* at refuting his own calumnies against me, will meet with that degree of credit the assertion merits, upon a perusal of the following facts.

He begins with an intentional concealment, by keeping a very important communication from his readers, of which he himself, from a perusal of these official papers, which he is pleased to term " my writings," must *have been fully aware:* namely,—that they were published in consequence of a public resolution of your Honourable Board,—and that the only part of them *written by me* was my letter addressed to the *Board*, and *not to the public*, which letter, as will be seen, by the two following extracts from the Report itself, it was your pleasure should be published with the other papers.—

It appearing, by the Reports of the medical officers of the hospital, that the operations performed on the blind pensioners by Sir William Adams, had been attended with great success, the Directors were desirous of viewing the men, and for that purpose convened a Special Meeting, at which the pensioners, as well those who had been under the care of former oculists, as the patients of Sir William Adams, were examined and individually interrogated; and as the effects of the operations performed by the latter, as stated in the Reports of the physician, surgeon, and apothecary, were found to be accurately detailed, the Directors have considered it to be their duty to give publicity to the official Reports and proceedings, on a subject so interesting to humanity.

At a Meeting of the Directors of Greenwich Hospital, at that place, on Monday, the 10th of January, 1814;

PRESENT:

CAPTAIN BROWELL, Lieutenant-Governor;

Lord Auckland. Mr. Yenn.

Rev. Mr. Cooke. Dr. Robertson.

It being evidently desirable that publicity should be given to the success which

has attended Sir William Adams's operations in restoring to sight so many pensioners of the hospital—

ORDERED,

That the Letter and the Report above mentioned, from the Medical Officers of the Hospital, together with Sir William Adams's Letter of this date, the Surgeon's two Letters of the 26th of May and 28th of August last, and the proceedings of the Board relative to this subject, be forthwith printed and published.

The *candour* and the *impartiality* which have guided the editor's conduct with regard to what *he knew were really* " my writings," and which have influenced his public remarks upon my professional character and conduct, will be properly appreciated by the public, when it is known, that my work on Diseases of the Eye, *containing a detail of every operation for artificial pupil and cataract (with only one exception) performed upon the pensioners at Greenwich Hospital, and published nearly two years before the " official papers," was at my request put into his hands by Mr. George Bell, one of the surgeons of the Royal Infirmary at Edinburgh, as that gentleman informed me. For reasons best known to himself, this editor has never thought proper to notice that work;* it was open to his critical analysis, and, had it merited his censure, he had a fair and manly opportunity of indulging his hostility to me. But he has even omitted to *name* this work in his recent analysis of the several medical and surgical publications which have appeared during the last ten years, although the other authors, on cataract and different diseases of the eyes, have been particularly enumerated.

This editor states that " he formed his opi-" nions of me entirely from my writings," and had " no personal acquaintance with me," but could he have been ignorant of my professional conduct while in Edinburgh, in the autumn of the year 1811?

I then, at the request of the surgeons of the Royal Infirmary of that city, performed two of the principal operations for cataract adverted to in the official papers, upon patients in the infirmary, before all the surgeons of that institution, and its numerous class of students, and afterwards gave a written description of these operations, (twelve months before they were published in my work) to Mr. Russell, the clinical lecturer in surgery, which description was read by him to his numerous class of students. Besides, I not only lent him my instruments to exhibit on that occasion, but permitted the instrument-maker, at the request of the surgeons of the infirmary, to take patterns, for the use of the profession, of all those which I employed upon the Greenwich pensioners, and afterwards examined his execution of my patterns with the utmost attention.

This conduct alone would be sufficient to shew that I was not inclined to favour "secrets or nostrums;" and as the patients operated upon were subsequently attended by the surgeons of the infirmary, who had witnessed the operations, they were perfectly competent to decide, whether I had strictly pursued the written description I had given Mr. Russell, and, also, whether I had given a fair and candid description of them in my work on Diseases of the Eye. The editor could scarcely have been ignorant of these facts; it was his duty to have been informed of them; indeed they *were noticed in the preface of that very work*, which, as already mentioned, had been put into his hands at my request*.

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* "The different operations which I have recommended, are, I believe, very "generally known, wherever I have been called upon to operate. While in "Dublin, my operations were witnessed by the most respectable physicians and

It is important for me also to add, that *more than two months* before the publication of the criticism in question, I had, in reply to similar charges of secrecy, published the following letter in another Medical Journal, which the Edinburgh critic can scarcely pretend not to have seen.

To the Editors of the London Medical Repository.

GENTLEMEN,

IN the notice taken, in the last Number of your respectable Journal, of the Official Report of the result of the new operations for cataract, published by order of the Directors of Greenwich Hospital, you justly express disapprobation of the concealment of any professional knowledge, which, if generally communicated, might prove useful. No one more perfectly coincides in this opinion than myself; which sentiment has induced me *constantly* to invite the respectable resident practitioners, wherever I have been called upon to perform any of the operations for diseases of the eye, which I have invented, or improved, to witness them, and to observe their results. While I assert that the concealment of any valuable practice from *selfish* or *mercenary* motives cannot be too severely reprobated, it must at the same time be obvious, that every man is justified in taking the necessary precautions to secure to himself the undisputed right, to any improvement which he may have suggested.

In the present instance, I was induced to request the surgeon of Greenwich Hospital to record on the hospital books the steps of my new mode of extracting the cataract of old persons, (all the other operations performed upon the pensioners being already before the public,) *not with the intention of retaining it as a secret*, but to "deter" other persons, of whose conduct on former occasions I have been obliged to complain, from again anticipating me, or claiming it as their own invention, should they learn its nature from any one of the *many professional gentlemen* (besides the medical officers of Greenwich Hospital) who have seen me perform that operation. I must, however, wait for a further experience of its superiority, before I present it to the public; as I conceive any professional man,

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" surgeons in that city; whose disinterested and friendly conduct I shall ever " remember with sentiments of esteem and obligation;—and, during a short stay " in Edinburgh, on my return to England, the surgeons of the Royal Infirmary, " actuated by the same sentiments of liberality, requested that I would exhibit " some of my operations for cararact on patients in that institution, which I had " the honour of doing before them, and the numerous class of students belonging to the University.—See page 11 *of the Preface to my work on Diseases of " the Eye.*"

whose opinions may be valued, would do wrong to publish, and to sanction any new practice, until by its extensive and general efficacy he conscientiously feels justified in recommending its universal adoption; or until he has ascertained whether any one of its stages is capable of further improvement.

It may possibly be superfluous for me to add, that the letter, in which the operation in question is mentioned, was addressed to the Directors of Greenwich Hospital, all of whom, with the exception of Dr. Robertson, the physician of the institution, are unacquainted with professional subjects; so that, even had I thought proper to publish the detail, it would have been quite out of place in that letter.

I have the honour to remain, Gentlemen,
Your very humble servant,
WILLIAM ADAMS,
Ophthalmic Surgeon to Greenwich Hospital.

26, *Albemarle-street*,
April 20, 1814.

To this letter were annexed the following remarks:—

*** If we ever misrepresent opinions from the imperfections of language, for we never can intentionally do so, or by accident give an improper colouring to the facts of any man, our pages are freely open to his justification.

Nulli negabimus, nulli differimus justitiam.

In the above instance there seems to be some feeling in the mind of Sir William Adams, that an idea of interested concealment may possibly be promulgated by our observations on the Greenwich Hospital Report (page 385, No. 4, of *The Repository*). In those observations we explained, as far as we then could, the concealment and its motives; and we "took it *for granted*" that Sir William did mean, at a fit opportunity, to lay the whole of his process before the public. We have now the authority of his own letter for his ultimate intention, with his reasons for the present delay; and we present it to our readers with satisfaction, because, it having been shewn on clear evidence that his process has been completely successful, this letter is an assurance that finally its benefits will be generally extended, by its full disclosure. Having so often observed the ill will and acrimonious contentions that have arisen among the claimants of professional discoveries, we are not dissatisfied with the method Sir William has adopted to secure his invention to himself, as well as to prevent the hostility that might arise on a doubtful case.—*Editors.*

So far in answer to the editor's "opinion of me, and of my writings."

The next assertion, that the "*whole publication* (the "Official Papers) *seems solely calculated to serve the pri-*

"*vate interests of Sir William Adams,*" is, to say the least, equally incorrect with his former statements, and implies something like, if not an absolute charge of disingenuousness or duplicity, against the Board of Directors.

The Directors publicly declare, that "they consi- "dered it to be *their duty* to give publicity to the "Official Reports and Proceedings, *on a subject so in-* "*teresting to humanity.*"—And from what causes did this determination arise? From the Report (No. 1) of the Medical Officers of the Hospital, that, in *twenty-four* operations, of extraction of the cataract, most of them performed by the oculists of the Royal Eye Infirmary in London, there was *only one* which had succeeded; while it will be seen by referring to Report 2, that on *thirty operations*, which I had performed, *only one* failed; although more than one-half of these cases had been either rejected as incurable, or operated upon without success, by the professional gentlemen who preceded me.

The Directors, fully aware of the acknowledged professional eminence of the former operators, justly concluded that the fault was in the operation they practised; and accordingly stated, in the commencement of their introductory observations,—

That, in the autumn of 1812, being informed that great improvements had been recently made by Mr. Adams, late Oculist to the West of England Infirmary at Exeter, in the mode of operating on the different kinds of cataract; and as the practice of *extraction* heretofore performed upon the pensioners had not been attended with the desired success, he was requested to examine the blind pensioners, and to select such of them for treatment as admitted of being cured.

The Pensioners being desirous to be placed under the care of Sir William Adams, the Medical Officers of the Hospital were directed to attend the operations, to afford every assistance, and to report to the Directors, the progress and result.

The Directors had been acquainted, that, with one exception, I had already published a description of all the operations for cataract, as copies of my work were laid before the Board ;—which work, with all the editor's pretensions to humanity, and his utter abhorrence of secrets, he had done every thing in his power to keep from the knowledge of the profession.

The object of the Directors, therefore, was to inform the public, from well-authenticated facts, of the comparative success of these new and improved operations, with the usual mode of extraction. In ordering the publication of the Official Papers, they could have had no particular view to my private interests, as boldly asserted by the editor alluded to. I was a stranger to them, *collectively* and *individually*, until called upon to perform these operations ; but, acting on the principle which they themselves assign, " they considered it to " be their duty to give publicity to the official reports " and proceedings, on a subject so interesting to hu- " manity." They might, perhaps, have conceived this measure the more necessary, it being actually published, that in more than *six hundred* operations performed for cataract, by extraction, *scarcely forty had failed, in that very institution*, where the greater part of *the unsuccessful operations had been previously performed upon the pensioners ! !*

But not only in the instance of the pensioners of Greenwich Hospital, but in the tables which detail the results of the operation of extraction in France —the opinions of its warmest eulogists on the continent—as well as those of the most eminent surgeons in this country, which appear in the work published with this letter,—the evidence of fact, and the judgment of authority, will be found in favour of my new and

improved operations ; and thus will be *disproved* the assertion, that the publication of the Official Papers was *solely calculated* to serve my private interest ;—the interests of society being so materially concerned in the question.

The editor is also incorrect in his assertion, that from *several passages* in the official papers (though there were only two which, by any application, he could strain to his own construction, and which two passages he has quoted,) he was justified in concluding that no early publication of the nature of my more recent discoveries was intended to be made.

With respect to my mode of treating the effects of the Egyptian ophthalmia, mentioned by the medical officers in their letter to the Board,—and the only operation for cataract specified by me in my letter to them, which had not been for two years before the public, I shall here stop only to state the fact,—that, for *five months* previous to the publication of the Greenwich Hospital Report, I had devoted the whole of my leisure to the preparation of the present publication on Cataract ; and I had not only given up all the time I could spare from professional practice, to the subject of the Egyptian ophthalmia, for some months previous to the editor's observations, but had, as has been already shewn in this letter, made my practice generally known throughout the profession. That practice had, indeed, been communicated by me to a considerable number of army and other surgeons, by whom it had been generally adopted ; as well as by the Medical Officers of the London Eye Infirmary, where diseases of the eye are publicly taught.

It cannot, I presume, after this statement of facts, be

denied, that this editor of the most widely extended publication of its kind, stands convicted of what I cannot allow myself to characterize, both in his original attack upon me, and in his attempt to justify that attack. But in addition I have to submit to the reader's judgment some very peculiar circumstances that subsequently occurred.

Mr. Battley's printed circular letter, having been forwarded, as I had ascertained, to every medical periodical publication in the metropolis, I naturally *concluded*, that he would not fail in transmitting it to that journal, which had already manifested such a feeling of hostility towards me. I took the liberty, therefore, of writing to a noble Earl residing near Edinburgh, and to a gentleman of the highest respectability, resident in that city, stating my suspicions; in these letters I enclosed a copy of a letter I had addressed to the President of the Ophthalmia Committee, which was read by all its Members, and which I was assured, had confuted the inaccuracies and misrepresentations, contained in Mr. Battley's publication. This letter I entreated my correspondents to communicate to the editor of the Edinburgh Medical and Surgical Journal, in order to convince him of the calumnies to which I had been exposed, and to give him an opportunity, gratifying to every honest mind, of sacrificing prejudice and falsehood, to justice and to truth.

The following copy of the letter, which I received from my friend residing in Edinburgh, will best explain the nature and result of this negotiation:—

Edinburgh, March 15, 1815.

DEAR SIR,

I received your dispatch, and lost no time in communicating its contents to Doctor Duncan, jun., from whom I learnt that he had received Mr. Battley's

letter, and, if I chose, would insert your's to Sir H. Halford along with it. This being the case, I thought it right to consult Lord W., as there was no time to correspond with you; and, with his concurrence, I have sent the following letter to Balford, to Doctor Duncan :—

" Dear Sir,

" I returned to Mr. Stark this morning Mr. Battley's letter, concerning Sir Wil-
" liam Adams; which, I confess, I think it would have been better to leave out
" of your journal. As you have, however, expressed your determination to pub-
" lish it, I also left with Mr. Stark, as you said you would give it room, a
" copy of Sir William's letter to Sir Henry Halford, as the best means of turning
" the edge of Mr. Battley's criticisms. In doing so, however, I beg you will un-
" derstand that I have no authority whatever from Sir William Adams. I do it,
" after having consulted another friend of his here, as the only means we have to
" prevent any ill effect from the publication of the printed letter.

" I am, dear Sir, &c. &c.

" 14*th March.*" " T. A."

I trust all this will meet your approbation. In conversing with Doctor Duncan, I find he still considers that you are possessed of *some secret;* else, says he, " how happens it, that *Sir William is always successful, whilst others practising the methods he has described, so often fail?*"

You know I am quite ignorant on the subject, and you must therefore forgive me if I cannot be so useful to you as I could wish.

Believe me, dear Sir,

Your's, very truly,

T. A.

After the receipt of this letter, written without the remotest idea that I should have occasion to employ it in any manner, I naturally expected to see Mr. Battley's letter, and my own also, in the next number of the Edinburgh Medical and Surgical Journal. But, when the editor offered to insert the latter, it may be presumed that he did not suppose my friends would agree to his so doing without my concurrence, which he well knew there was not time to obtain, and that he was not at all prepared for their demand that Mr. Battley's

misrepresentations should not be published without their antidote.

It would indeed have been of no small importance, that my letter to Sir Henry Halford should have appeared at that time in this journal, as it not only refuted the misrepresentations of the Secretary to the London Eye Infirmary, but exposed those also of the Medical Officers of that institution, which had then been published. In a state of perplexity, between inclination and duty, the editor finally determined on withholding both Mr. Battley's letter, and my refutation of it, from that view of the profession which his journal would have afforded. His avowed excuse was the want of room, though a page or two would have been sufficient for the purpose, and many of his journals have been known to exceed by fifteen or twenty pages that, in which he would not find a place for those troublesome papers. In his apology to the public for not publishing them, he, however, expressed a *patriotic* wish, that the public money, which he seemed to insinuate, that I was receiving, or about to receive, from Government, for the discovery in question, might not be misapplied; whereas it will be seen by the very letter which he declined to insert, and which I now publish, that I had neither obtained, nor solicited any remuneration from the Government.

(COPY.)

To Sir Henry Halford, President of the Ophthalmic Committee.

December 18, 1814.

DEAR SIR,

A printed letter having been sent to me this day, signed by the Secretary of the London Eye Infirmary, and which is ostensibly published "for the assistance "of the Ophthalmic Board in their duty as Censors," I think it necessary, without delay, to contradict, in the *most decisive manner*, that part which states "that I "have made an application to His Royal Highness the Duke of York for a *grant*

" on account of a new mode of treatment successfully employed by me in the cure of the ophthalmia."—*No such application ever has been made by me, nor have I ever entertained the most distant idea of so doing.*

Equally false is the charge of my endeavouring to claim the merit of any discovery of Mr. Saunders. The preface to my Essay on the Ophthalmia, which the Committee perused last year, as well as my recent letters to Mr. Abernethy and yourself, prove that I have acknowledged all the information I obtained from him in the treatment of that disease, and have also pointed out in what respects my practice differs from his. As I stated in that Essay, and these letters, Mr. Saunders first pointed out to me the granulations of the lids, and I by no means do, or ever did, claim the merit of *that* discovery; but I certainly do, and ever shall, that of an *improvement* upon his practice,—as well as a mode of removing opacities of the cornea attending this form of the disease, which I never saw him attempt, and which I have, as I stated, reasons for believing his successor does not, even now, frequently succeed in accomplishing; yet without removing these opacities (when once they are formed) the removal of the granulations cannot in the least benefit the sight of the patient. That my wish is only to claim an *improvement* in the treatment of the *third* stage, and that I am more solicitous about the *utility* of the practice than the establishment of its *originality*, is shewn by my having called upon you a week since, to request, in drawing up the Report, to wave my claims to " a new treatment" of the third stage, in order to save the Committee the trouble of investigating them, and merely to state their opinion, whether, the method pursued by me, or that by Mr. Saunders, " was better " suited to the practice of the army." You did not think it right for me to interfere; and therefore the matter dropped.

It may be proper here to explain, that, when I laid pretensions to a "new mode of treating the ophthalmia," I alluded principally to my discovery of the efficacy of " continued sickness and vomiting" in curing the disease a few hours after its commencement. That the Commander-in-Chief was of the same opinion, is proved by his declining to see the deputation from the St. Pancras Committee, because, as the Adjutant-General wrote me, his Royal Highness expected that the Ophthalmic Committee would report, upon my practice, in *all the stages* of the ophthalmia, and therefore thought it would be improper for him to form an opinion from any other source than that Report.

With respect to the accusations contained in the printed letter of Mr. Battley, of any dishonourable intention to anticipate Mr. Saunders, I pledge myself to rebut the charge in the most satisfactory manner, by the evidence of Mr. Russell, Treasurer of the West of England Eye Infirmary; who, five years since, when the ophthalmia raged so extensively throughout the army, and when the Government was so anxious to discover a cure, invited, without my knowledge, the General of the district (the late General Thewles) to come to the Exeter Eye Infirmary, for the purpose of seeing some ophthalmia invalid soldiers whom I had cured; and who strongly urged the propriety of my immediately acceding to General Thewles's wish and proposal, of officially transmitting to the

late Commander-in-Chief (Sir David Dundas) an account of what he had seen, but which I peremptorily refused until I had obtained Mr. Saunders's assent.

For reasons which I do not pretend to explain, Mr. Saunders angrily refused his consent, as well as to a subsequent proposal, that, through my interest with General Thewles, the facts should be transmitted to Government, giving him the whole merit of the original discovery, and withholding my own claims to the important improvements I had made in his practice.

Had I been the character which Mr. Battley represents, it must be evident I might have complied with General Thewles's earnest wish of reporting my success to Government without Mr. Saunders's knowledge or consent; but to which proposal I would not for a moment listen, although it was strongly enforced by my friend, Mr. Russell, after Mr. S——— had refused to afford the information himself.

I have the honour to be,
Dear Sir,
Your humble servant,
WILLIAM ADAMS.

P. S.—Soon after the correspondence upon this subject, Mr. Saunders died; when, released by his death from those feelings of delicacy which had hitherto restrained me, I assented to the proposal of my patron, the Bishop of Exeter, to introduce me to the Adjutant-General, who did me the honour to present me to the late Commander-in-Chief; to whom, shortly afterwards, I addressed a letter upon the subject, of selecting a certain number of ophthalmic patients to be sent down to Exeter, for the purpose of undergoing my improved treatment for the *third stage* of the disease. In this letter, dated March 1st, 1810, a copy of which is, of course, in the Adjutant-General's Office, are the following passages:—"Within these few months I "have perfectly cured from fifteen to twenty invalid ophthalmic soldiers by pursuing "a mode of operation *first suggested by my late friend and preceptor, Mr. Saunders,* "*and since improved by myself,* without meeting with a single instance of "failure." Again, "In thus coming forward, I must beg to state, that the only "motives by which I am actuated are, in the first place, a desire of communicating "highly useful information; and, secondly, *an earnest wish to benefit the widow of* "*my much-esteemed friend.*"

Any further refutation of the charges brought forward by Mr. Battley against my character and conduct must be deemed superfluous.

His present conduct evidently proceeds from the spirit which he betrayed, when he brought before the Committee of the London Eye Infirmary, an individual, to declare, that I had expressed a wish to publish Mr. Saunders's discoveries as my own. This too took place after Mr. Saunders's death, who had himself published, in an Annual Report of the London Eye Infirmary, the instruction he had afforded me, and after I had myself not only acknowledged my obligations to him, but had even specified his discoveries in the first Annual Report of the Exeter Eye Infirmary, copies of which were officially sent to the London Eye Infirmary.

May I not now put the following question, without a doubt as to the answer,—whether it be not evident, from the whole of the Editor's conduct, that he has intentionally kept back from the notice of the public, every thing which could contribute to my professional character*, or to the refutation of charges both malicious and unjust, while he eagerly seized upon the only opportunity which offered, to do me, as he seemed to expect, a most essential injury? The facts, however, which I have related, prove that this attempt was made by the sacrifice of that honest feeling and sense of justice, which ought to regulate the conduct of every man, and to form an invariable standard for the conductors of a public journal, the reputation of which must necessarily be reduced in the opinion of the public, when its pages are prostituted to motives of party feeling, or of individual interest.

My work of 1812, *containing an explanation* of my various operations, is in this Editor's hands, and defies his criticism.

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* The character of that work may be seen by the following quotation, taken from the Report read before the Société Philomatique, which was subsequently translated and inserted in the Philosophical Magazine.

" The work of which we have now given an account to the Society, evinces in " its author a conspicuous talent for observation, great experience, and much of " that ingenious spirit which is ever fertile in resources, and so useful in the " practical sciences. It is, in short, one of the best works ever published on " the Diseases of the Eye. We are of opinion, therefore, that the Society owes " its thanks to the author for his book; and that it will be an honour to the " Society to enrol Sir William Adams among the number of its foreign corre- " spondents *.

(Signed) " MAGENDIE, D.M.S.
" N. DE BLAINVILLE."

* " This Report was read, and highly approved by the Society, at a General " Meeting held on the 28th of May, 1814, when Sir William Adams was unani- " mously elected one of its corresponding members."

In the beginning of 1815, on receiving a copy of the Greenwich official papers, which I did *not* write, and which he *knew* I did not, he first ventures to affirm—that he has no other acquaintance with me than what *these writings* of mine (for so he wishes to make them appear to the world) have produced: and secondly, he insinuates that the operations I practise remain *undiscovered;* and that no early communication of them is intended.

While only two months afterwards, (March 1815,) he incidentally admits, not only that I *have* described my methods to the public, but that others have actually *adopted and practised them;* observing upon the occasion, with extraordinary simplicity, that "I must still possess some secret by which I am always successful, while others *practising the methods I have described,* (and described too in the book which he had then for two years withheld from the public,) so often fail*!!!

The dilemma is here complete, and let the Editor extricate himself from it, if he can †.

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* If, in reality, I have been more successful than others, this might be readily accounted for, by the greater degree of experience I must possess in these operations.

Can it be a matter for surprise, that the practice of any general surgeon, in new operations published only for two years, should not be as uniformly successful, as that of the individual by whom they had been invented and matured, and who had subsequently possessed the very extensive share of operative practice I have enjoyed?—I have stated in my work, published with this letter, that I calculate to have performed, on an average, six or eight operations each week, during the two years in which I was at the head of the West of England Eye Infirmary, and I have repeatedly operated upon ten or twelve patients the same day.

† It would appear from a statement made by Doctor Farre, in the Preface to the second edition of Mr. Saunders's posthumous work, that Mr. Saunders's memory has not escaped the hostility of this Editor; who freely admitted into his journal the unmerited remarks made to the prejudice of Mr. Saunders's character, by the biographer of Mr. Gibson, while he withheld from the view of the public Doctor Farre's subsequent vindication of that character.

The passage, on which the charge of concealment is attempted to be fastened on me, occurs in my letter to the Directors of Greenwich Hospital.

In this passage I observed that I had taken steps to procure my new operation of extraction to be recorded in the hospital books, in consequence of having been anticipated in the communication to the public of my operation for artificial pupil,—and in consequence also of my instruments, as well as operation for the soft cataract, having been altogether pirated from me. These piracies were openly committed, without the slightest notice being taken of them by the Edinburgh, or any of the other Medical and Surgical Journals (one only excepted),—although it is the duty of those journals to protect the rights and properties of medical authors. I therefore submit to the candour of my readers, whether I did not owe it to my professional reputation, to take this precaution, in order to secure to myself the credit of the invention, of my new operation of extraction.

Mr. Ware, in the second edition of his works, published in 1805, strongly deprecated Cheselden's operation for artificial pupil. A few weeks, however, previous to my settling in London in the year 1811, he edited a new and third edition of the second volume of his works, even before it had become scarce in the shops, in which he changes his opinion of this operation, with a mere unsupported declaration, that he had repeatedly and successfully performed Cheselden's operation, but without the slightest allusion to his former unsuccessful practice, or to the cause of the improvement in his later experience. The character of this statement will appear from the exhibition of the *passages*, in the two editions alluded to.

Mr. WARE's *Second Edition, published in* 1805.

The translator sees no good reason to dispute the veracity of Mr. Cheselden, in his description of the present case. It was certainly possible for him to succeed in the way he has here mentioned. At the same time, the translator is of opinion, that the operation proposed by the Baron, which he thinks would naturally occur to every person who prefers the operation of extraction to that of depression, is much more likely to be attended with success.

Mr. WARE's *Third Edition, published in* 1811.

The translator sees no good reason to dispute the veracity of Mr. Cheselden, in his description of the present case. It was certainly possible for him to succeed in the way he has here mentioned; and the translator particularly recommends the operation in those cases where the pupil has become closed after the extraction of the cataract.

In these the opaque crystalline having been removed, it is most probable that the imperforate iris forms the only impediment to the passage of light to the retina; and the iris being stretched by the closure of the pupil, its division in the way recommended by Cheselden gives its fibres an opportunity to retract, which they generally do to a considerable extent.

The translator has repeatedly performed the operation with perfect success; scarcely any inflammation having been excited by it, and vision becoming at once as perfect as after the most successful removal of the cataract.

In order to give greater publicity to his recently-adopted practice, he at the same time published a small pamphlet, extracted from his greater work, repeating his recommendation of Cheselden's operation. In the edition of this volume, as well as in the pamphlet, he also anticipated me in the description of my operation for the soft cataract in children, and gives an account of his success in the operation, which, however, he acknowledges to have seen me perform, but still continues to express his opinion in favour of extraction, in preference, when the disease attacks adults and aged persons. About this period, he nevertheless performed it on adults, two of whom afterwards became my patients, and in a short time he adopted it also in persons far advanced in life.

In my work upon Diseases of the Eye, I have noticed this uncandid treatment, and given the particulars of the case of soft cataract to which Mr. Ware alludes, adding, that he had expressed himself much pleased with the operation, and

"acknowledged at the time, to the other professional gentlemen I had also "invited to witness it; and, after I left London, to the patient and his friends, "whom he frequently visited, to observe the after-treatment and the progress of "the cure, that he had never practised, or previously seen, a similar operation."

Again, in regard to his anticipation of my operation for artificial pupil, I observe that—

"In March 1810, during one of my visits to London from Exeter, where I then resided, I met Mr. Ware in consultation on the case of Lady W———, (the initial of whose name I am authorized to insert,) who laboured under closed pupil, complicated with cataract and amaurosis. I then communicated to him the result of my first operations for artificial pupil, and explained to him the manner in which they were performed. I also stated the circumstances which, I conceived, had induced the generality of surgeons to relinquish the operation of Cheselden; and pointed out the manner in which they might be obviated. In the course of the same conversation, I expressed a confident expectation, that, if I could obtain the instruments I wished, the disease of closed pupil would no longer continue so intractable as it had hitherto proved. Mr. Ware appeared so incredulous on the subject, that he almost doubted the facts I had stated; and by no means acquiesced in the general inferences I had deduced from them. In the following June, at his own house, I again renewed the subject of artificial pupil, but found his opinion unchanged. At this time I put into his hand a copy of the first Annual Report of the West of England Eye Infirmary, published November 1, 1809, (more than twelve months before the appearance of Mr. Gibson's work on Artificial Pupil, &c.,) in which is recorded a vote of thanks given to me by the respectable Committee of that Institution, 'for having practised an operation with perfect success, in the case of closed pupil, complicated with cataract; very few cases of which, as this meeting is informed, are recorded in the annals of British surgery'"*.

Two facts are therefore obvious:—first, that if Mr. Ware had ever successfully performed the operation for artificial pupil before March, 1810, he would not have doubted my assertions, that I had succeeded in re-

* See my work on Diseases of the Eye, p. 31.

storing Cheselden's operation; which he did in the hearing of Lady W——, and her husband. Secondly, that if he had succeeded, even so late as June, 1810, when I dined with him, he would not still have continued to doubt my assertions; but, on the contrary, would have pointed out, that I was not in justice entitled to the honour of receiving a public vote of thanks for my success.

But what places the matter beyond all doubt, is that Mr. Ware expressed his regret at having thus anticipated me, to a gentleman who was anxious to procure our joint opinions on the case of his wife; when I declined meeting Mr. Ware, for the reasons assigned in the following letter:—

(COPY.)

SIR,

I HAVE had the honour to receive your note, requesting me to meet you and Doctor Sims in consultation to-morrow, at Mr. ————'s, King's-road. It occasions me much regret to be under the necessity of declining to acquiesce in your proposal, as, from the consequences which resulted from my unreserved communications to you when we met at Lady W———'s four years since, it is quite natural that I cannot again consult with you, with the same feelings as I then did. It being absolutely necessary for the benefit of the patient that there should be no restraint, or want of confidence in those to whom the medical treatment devolves, a conscientious regard to my duties, as a professional man, induces me to adopt my present determination. I feel the more regret at being compelled to act in this manner, as it is the first time in my life, that I have refused to meet a respectable member of the profession.

The injury of which I have been obliged to complain in my publication on Diseases of the Eye, (and for which you have offered no reparation either public or private,) has been the more sensibly felt by me from your general character for liberality; for that character removed all hesitation in inviting you to witness one of my newly-invented operations for cataract, as well as in communicating to you my revival and improvement of Cheselden's obsolete operation for artificial pupil, thus evincing a degree of candour that merited from you a very different conduct to that, which you well know has been pronounced, *wholly unbecoming* the high rank and eminence you hold in your profession.

I have the honour to be, &c. &c.

March 1*st*, 1814. WILLIAM ADAMS.

To JAMES WARE, Esq.

To this letter I received no reply; but, having enclosed a copy of it to the husband of the patient, as my reason for refusing to meet Mr. Ware, he afterwards informed me, in the course of my attendance on his wife, with Doctor Sims, that Mr. Ware continued to express his regret that he should have anticipated me in the publication in question. He did not, however, as in my opinion he should have done, express that regret either to myself or to the public, and therefore we had no further communication.

It is with sincere regret that I feel myself compelled to bring before the public, transactions which it has been my wish should sleep with the dead, because such reference may be painful to Mr. Ware's family, particularly to his son, for whom I entertain great personal respect; but I am called upon, by every consideration, to explain the reasons that caused me to take those precautions, which have formed an ostensible ground-work, for so many injurious attacks upon my personal character and professional conduct.

With respect to the very extraordinary piracy attempted of my operation for the soft cataract, as well as of the instruments which I employ in its execution, I feel restrained by no scruples of delicacy, and shall proceed at once to expose it.

In March, 1811, I was called from Bath to operate in a case of congenital cataract, upon the child of a gentleman in Portman-square. Two professional gentlemen were present: one, that liberal and highly eminent practitioner, Sir Richard Croft, the other the medical attendant of the family, whom I had never

before seen, but who attended the operation, probably at the request of the family. On the morning of the operation he made very particular inquiries as to the exact steps of the operation, the form of my needle, and the name of the maker, &c. &c. To all his questions I replied, in the hearing of Sir Richard Croft, without the least reserve. I also put into his hands a copy of the Second Annual Report of the West of England Eye Infirmary, in which the operation itself, with the needle, which he saw me employ for the relief of the little sufferer, were very particularly described.

In the middle of August, 1812, I published my work on Diseases of the Eye, in which I described this operation and needle, and also my concave speculum; of both instruments I gave engravings.

The following October, a paper appeared in the Medical and Physical Journal, and in Dr. Shearman's Journal, written by Mr. Stevenson, containing some general observations upon cataract; in November a second paper appeared, as if in continuation of the former, in which Mr. Stevenson published as inventions of his own, the identical operation and needle, which had already been described by me, (with an engraved representation of the latter,) in my work published the preceding month of August. Mr. Stevenson also gave an engraving of a concave speculum, in principle the same as that I had published, and the exact representation of one which I had constructed in February, 1812.

In February, 1813, a pamphlet, entitled A Practical Treatise on Cataract, was also published by Mr. Stevenson, containing a repetition of his descriptions of my operation, needle, and speculum, with

engravings of the two latter. Of these descriptions, as well as of the engravings, I give copies from the respective publications, in order that a proper judgment may be formed of my statements.

ADAMS.

Published August, 1812.

" The speculum of Pellier is, I believe, very generally used in this operation; but the patient often complains more of the pain caused by it than by the needle.—This appeared to me to arise from the segment of two spherical bodies, nearly of the same magnitude, being in contact, by which all pressure is confined to a single point. Sufficient control over the action of the muscles of the eyeball, can therefore only be obtained by using a degree of compression, which gives great pain during the operation, and sometimes produces a contusion of the coats of the eye, which I have seen excite and keep up considerable inflammation for some time. It is therefore evident that Pellier's speculum is not well adapted for the intended purpose."

" ——— but the patient often complains more of the pain caused by it (i. e. Pellier's speculum) than by the needle."

" The principle which ought to be kept in view, in the construction of an instrument for fixing the eye, is to divide the necessary pressure on as large a surface as possible, instead of confining it to a single point. To effect this, the bearing part of the speculum should be concave, and accurately adjusted to the convexity of the eye-ball."

" I have since had another made of solid metal, which possesses the advantage of a smooth and regular surface. The bearing part is so formed as to make an equal pressure on somewhat less than one-third of the circular outline of the eye-ball; but, as this varies in different patients, the operator should always be provided with two or three instruments of different sizes."

STEVENSON.

Published November, 1812.

" Pellier's elevator, although in many respects an objectionable instrument, has for some years been generally preferred. Being made of thin silver wire, and the bearing part, which is opposed to the superior spherical surface of the eye, being nearly convex, in order to effect the requisite steadiness of the globe, so much pressure must be applied to one point, as cannot fail to occasion uneasiness, and endanger contusion, with subsequent inflammation to the tunics of the eye."

" ——— instead of Pellier's elevator; the application of which, will often produce more pain than all the subsequent steps of the operation."

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

" After a series of improvements in its form and construction, the speculum which I have now the honour to submit to the consideration of the profession will, I flatter myself, be found by others, as it has proved in my own practice, well adapted to afford, in the most easy and effectual manner, all the assistance that can be desired from instruments of this description."

On examining the annexed engravings, to which I request the reader's particular attention, it will be seen, that the principle of my concave speculum, and that published by Mr. Stevenson as his own invention, is precisely the same. The *convex* end of Fig. 1 is Pellier's speculum, which was in general use in this country. In 1806, I employed Mr. Smith, surgeons' instrument-maker, St. Saviour's Church-yard, Southwark, to alter the convex form at one end into a concave form, in order to adapt it to the convexity of the eye. This he attempted in the manner represented in the *concave* end. Finding, however, that its points of pressure acted unequally upon the eye-ball, and not having a convenient opportunity to procure another better formed, I continued to employ Pellier's convex instrument until my settlement in London in 1811. In February, 1812, I directed Mr. Eichhorn, surgeon's instrument-maker, of St. Martin's Lane, to construct for me the concave speculum, Fig. 2, filed out of a piece of lead*; and, shortly afterwards, one in silver, which is represented by Fig. 3. This is an improvement on Fig. 2, and is the same *published in my work of August*, 1812.

Fig. 4 is that Mr. Stevenson published in November, 1812, which is *precisely the same as* Fig. 2, and which, as already stated, is constructed upon the *principle* of Fig. 3, that, I had published the preceding August.

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* Both these instruments are for inspection in the hands of Messrs. Savigny, surgeons' instrument-makers, St. James's street.

Fig. 1.

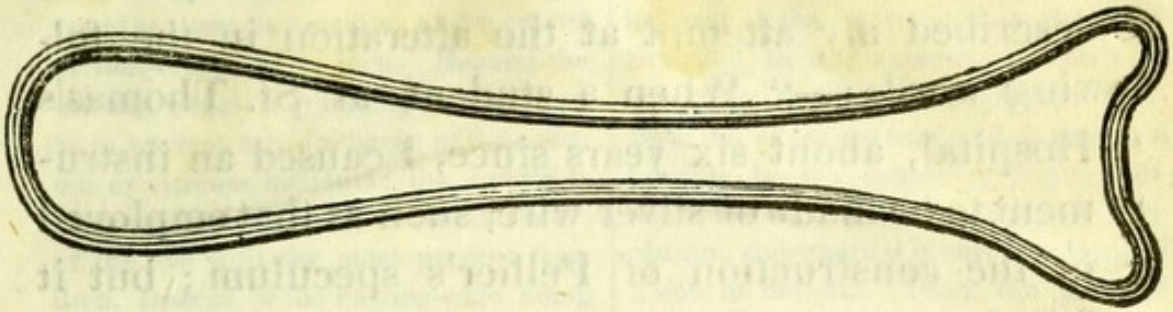


Fig. 2.

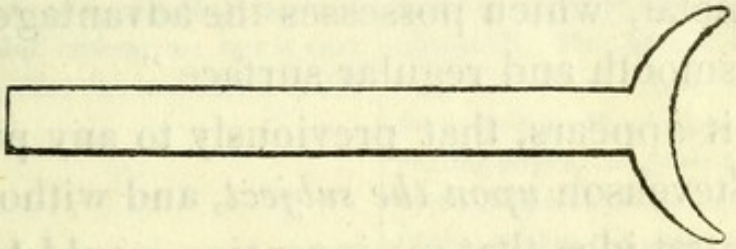


Fig. 3.

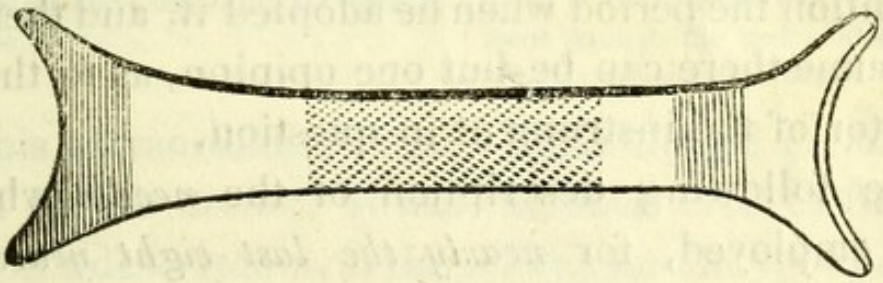
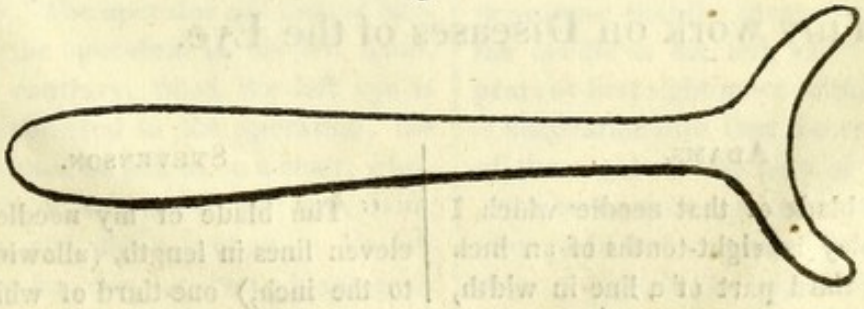


Fig. 4.



Mr. Stevenson does *not mention in his Treatise when he first adopted* this concave speculum. In my work, I described my attempt at the alteration in the following words:—" When a student at St. Thomas's " Hospital, about six years since, I caused an instru- " ment to be made of silver wire, such as that employed " in the construction of Pellier's speculum; but it " failed to answer the purpose, as the curvature was " irregular, and did not correspond with the con- " vexity of the eye;" and again—" Disappointed in " my expectations, I have since had another, made of " solid metal, which possesses the advantage of a per- " fectly smooth and regular surface."

Thus it appears, that previously to any publication by Mr. Stevenson *upon the subject*, and without having the remotest idea that my invention would be claimed by another,—I had actually stated the very year when I first attempted to carry into effect the proposed alteration. Mr. Stevenson has not thought it prudent to mention the period when he adopted it, and therefore I presume there can be but one opinion, as to the real inventor of the instrument in question.

The following description of the *needle* which I have employed, for *nearly the last eight years,* for operating on the soft cataract, will shew the *very extraordinary* similitude between it, and that described and published as his own invention, by Mr. Stevenson in November, two months subsequent to the publication of my work on Diseases of the Eye.

Adams.	Stevenson.
The blade of that needle which I now employ is eight-tenths of an inch long, the third part of a line in width,	" The blade of my needle is only eleven lines in length, (allowing twelve to the inch,) one-third of which, from

nearly flat, having a slight degree of convexity through its whole extent. It is spear-pointed, with both the edges made as sharp as possible, to the extent of four-tenths of an inch. Beyond the cutting edges it gradually thickens, so as to prevent any discharge of the aqueous or vitreous humours: the handle is of the usual length. It enters the coats of the eye with the most perfect freedom. Instead of the cutting-edge being confined to the mere point, it extends so far back, as to be nearly, if not entirely, equal to the diameter of the cataract. Its convexity also affords a sufficient degree of strength to prevent it from bending during its passage through the coats of the eye, should they present any considerable resistance: but it cuts so very sharp, that this in general is not to be feared.

" Some caution in its use, however, is requisite on the part of the operator; otherwise, as it is an instrument of great power, and traverses the eye with so much facility, it may wound the iris, or its point may be carried too far towards the nose."

the shoulder downwards, is round, and diminishes gradually from half to one third of a line in diameter. The remaining part of the instrument is gradually flattened to the extremity, which is very thin, flexible, and spear-pointed. Both the edges are rendered as sharp as possible to the extent of three lines above the angles, which are ground very obtuse, and where it is only one-third of a line in breadth. From the point of the needle to its insertion into the handle, it gradually increases in size; by which mechanism, not only is its introduction into the eye effected with less resistance, but likewise the escape of any portion of the aqueous or vitreous humour is at the same time altogether obviated. The handle is of the usual length, and octangular; and there are three dots on the side, answering to the cutting edges, as a guide to the operator, when the point of the instrument is concealed within the globe of the eye."

" On this account it requires, I must admit, a very steady hand, and a considerable share of boldness and decision, together with a practical acquaintance with the resistance that is usually opposed to the introduction of an instrument through the tunics of the eye, in order to prevent accidents."

This extraordinary degree of similitude is not confined to the *needle;* it has extended even to Mr. Stevenson's description, of the *position for the right performance of the operation*, as well as of the operation itself.

ADAMS.

" The patient, when the right eye is to be operated on, must be placed on his back. The operator sits behind him, holding the speculum in his left hand. On the contrary, when the left eye is to be subjected to the operation, the patient must be placed on a chair, while the operator sits before him; and, fixing the eye with the speculum in his left hand, he has also the great advantage of operating with his right. This variation

STEVENSON.

" When the right eye is the subject of the operation, it has been customary to propose that the surgeon should take the needle in his left hand. This appears at first sight more artificial; but it is unquestionable that the constant use of the right in this part of the world, gives every man a greater command and strength in that member. Besides which, if the patient is placed, as I would recommend, on his back, the surgeon,

of position appears to me highly advantageous, as few, if any, can possess the power of using both hands with equal dexterity."

"The pupil being in a dilated state from the application of the extract, or a strong solution of belladonna, an hour previous to the operation, and having secured the eye by a gentle pressure with the concave speculum, introduced under the upper eye-lid, I enter the two-edged needle through the sclerotic coat, about a line behind the iris, with the flat surface parallel to that membrane. I then carry it cautiously through the posterior chamber, without in the slightest degree interfering with the cataract or its capsule, till the point reaches the temporal margin of the pupil; when I direct it to the anterior chamber, and carry it on to the nasal margin of the pupil, in the line of the transverse diameter of the crystalline lens. I then turn the edge backwards, and, with one stroke of the instrument, cut both capsule and cataract in halves. By repeated cuts in different directions, I afterwards divide the opaque lens and its capsule in many pieces, and at the same time take particular care to detach as much of the latter as possible from its ciliary connexion. As soon as this is accomplished, I turn the instrument in the same direction as when it entered the eye, and, with its flat surface, bring forward as many of the fragments as is in my power into the anterior chamber, by which means I frequently leave the upper part of the pupil perfectly free of opacity."

sitting behind him, will find the fingers of his left hand exactly in the situation to take charge of the superior palpebra, and to steady the organ without the use of any speculum, the assistant at the same time depressing the lower lid."

"The patient having been properly seated, the pupil fully dilated by the external application of the belladonna, and the eye steadied by means of the fingers when practicable, or otherwise by a well-adapted speculum, the instrument is to be introduced in the usual manner through the sclerotica, at a distance not exceeding one line behind its junction with the cornea, with its flat side parallel to the plane of the iris. The needle is then to be carried to the front of the cataract, its point being projected across the anterior chamber to the nasal margin of the pupil. The cutting edge is next to be turned backwards; when, by moving the needle so as to describe the segment of a circle, the capsule with the enclosed lens must be divided into equal portions. Proceeding cautiously in a similar manner, by repeated transverse and perpendicular incisions, the whole crystalline, and its enveloping membrane, will be reduced into small flocculi. This object having been accomplished, the handle of the instrument is to be carefully rotated between the finger and thumb*; by which manœuvre the capulse is more effectually detached from its connexions with the zona ciliaris at every point of its circumference, and the cohesion of the component parts of the lens more certainly destroyed. The whole, or as many of the fragments of the capsule and crystalline as the circumstances of the case will admit, without danger of wounding the iris or ciliary processes, are then to be pushed forward into the anterior chamber, by means of the flat surface of the needle; which must then be withdrawn in the same manner as it was passed into the globe of the eye."

* See Pott's Directions for operating on a soft Cataract.

From the foregoing comparisons, it is evident that the *speculum*, the *needle*, and the *operation*, described by me in August, 1812, were published in the Medical and Physical Journal, by Mr. Stevenson, as his inventions, in November, 1812, and repeated in his Treatise on Cataract, in February, 1813. Mr. Stevenson, in his paper, *dated* in August, 1812, but *certainly not sent* to the periodical publication in which it appeared until the following October*, asserts that he had ordered the needle to be constructed *eighteen months before*, which, by a curious coincidence, carries his assumption back to the *exact period*, when the apothecary who attended my operation in Portman-square, was so particularly minute in his inquiries respecting the steps of my operation, as well as the name and address

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* The following letter was written by the late Mr. Royston, Editor of the Medical and Physical Journal, to a respectable surgeon, who, although at the time an utter stranger to me, was so forcibly struck at the flagrancy of the piracy, that he undertook to write, for the express purpose of exposing it, but he suppressed his publication, after it was printed, at my particular request:—

" Sir, *London, May* 25, 1813.

" Having no particular reason for remembering the precise day on which a communication may be sent me, as Editor of the Medical and Physical Journal, I cannot answer to a day, the time Mr. Stevenson's papers came to hand; I remember that event, however, with sufficient distinctness to say, that the first part of Mr. Stevenson's paper on cataract, printed in the Journal for October, 1812, (No. 164,) was received in, or about the middle of August; and *the second part, printed* in the Journal for November, was received *before the middle of October, but not so soon as the month of September;* otherwise, as a matter of course, that receival would have been stated in the notices to correspondents, in the usual place in the October Journal.

" I am, Sir,

" Your obedient Servant,

" WILLIAM ROYSTON."

To Mr. Price, Surgeon, Middle-street, Gosport.

of my instrument-maker, &c. &c.*. I have since ascertained that this apothecary is a most zealous professional friend of Mr. Stevenson; and, in his anxiety to serve him, that he has forgotten towards me, in a variety of instances, the professional etiquette which usually regulates the conduct of respectable practitioners. The fact, however, of my having given him the printed Report of the West of England Eye Infirmary, dated October 3, 1810, (in which is the following passage,) very sufficiently proves my priority to Mr. Stevenson, in the adoption of the needle, and the operation alluded to.

" In consequence of having also made an alteration in the instrument for curing " cataract, as well as in the method of conducting the operation taught me by " my late most respected friend Mr. Saunders, I am enabled to succeed in " a much shorter space of time than I was in the earlier periods of my practice; " the necessity of repeating so frequently the operation to effect a permanent " cure, which then existed, being by these means almost entirely superseded. The " result of my experience in cases of this nature leads me to assert, that no ope- " ration of importance in surgery is more uniformly successful than that which " *several of my professional friends have seen me practise in the cure of cataract for* " *these last eighteen months;* having, even within the last twelve months, operated " on more than forty cases successively, in my public and private practice, with- " out experiencing one unfavourable result.—This mode is equally applicable to " persons *born blind* of cataract, of whom I have cured *thirty-seven* with but one " instance of failure, and that entirely attributable to the patient's indiscretion. " Even now, there would be every probability of a favourable issue, if he would " submit to an operation for closed pupil."

The first case which suggested to me the idea of using his instrument, and performing this operation, occurred in November, 1808, and was, in fact, the identical case

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* It is worthy of remark, that my nephew, Mr. Hockin, perfectly recollects carrying one of my needles about that time also to Messrs. Savigny as a pattern. At this period, I remember to have had occasion, more than once, to complain to them of their exposing to sale, without my permission, different instruments which I had constructed in a peculiar manner for my own use.

which gave rise to the revival of Cheselden's obsolete operation for artificial pupil. During my subsequent residence in Exeter, I uniformly employed the needle in numerous operations for cataract. In Bath, the operation was witnessed by Dr. Chichester, Dr. Murray, &c. &c.; in Bristol, by Dr. Pope, Mr. Estling, and by various other professional gentlemen, several months previous to my operation on the child in Portman-square, which took place at the exact period when Mr. Stevenson states he ordered the construction of his needle.

The evidence which I have adduced of anticipations and piracies will, I presume, be considered as conclusive; and I can have no doubt that it will be the opinion of every candid and reflecting reader, that I was fully justified in having my new operation of extraction recorded in the books of Greenwich Hospital; not to prevent my practice from being known, as prejudice has insinuated, but to defend it from piracy, and to secure to myself, whatever merit belonged to my inventions and improvements. The precaution, however, was not decisive. I have shewn by facts and dates, in the work on Cataract which accompanies this letter, that the peculiar principle even of *this operation* was published by Mr. Travers, without any acknowledgment of its origin, two years after I had adopted it, and a year and a half after it had been recorded on the hospital books, and very extensively witnessed by the profession.

The editor of the Edinburgh Medical and Surgical Journal has gone no further than to accuse me of that illiberal disposition to conceal my practice which I have in this letter, I think, incontrovertibly refuted, preserving a total silence on every other point that

concerns my professional reputation. Persuaded, as he must have been, from the perusal of my work on Diseases of the Eye, and of my Letter addressed to the president of the Ophthalmia Committee, that I had made no assumption or claim, either in respect to my improvements in the treatment of cataract, or to my practice for the cure of ophthalmia, to the injury of Mr. Saunders, or which were not proved to be correct by the evidence of facts and experiments, he prudently passed over, with the silence it deserved, the Special Report of the Medical Officers of the London Eye Infirmary. The example, however, of unmerited censure, was followed by other reviewers, and the first of those followers whose conduct I shall notice, is the London Medical Repository, which had already felt it necessary to make me an apology relative to the Greenwich Official Papers *.

I was informed by one of the editors of this Journal, that a colleague of his had determined to review the Special Report; and a most respectable physician, whose friendship I have the honour to enjoy, and who was acquainted with this editor, shewed him my letter to Sir Henry Halford, as president of the Ophthalmic Committee †. But although, from its perusal, he became acquainted with the inaccuracies and misrepresentations of the Report, he disregarded its influence, seconded by the authority of this gentleman, as well as of his colleague, both of whom were fully persuaded of my honourable conduct to Mr. Saunders. He accordingly reviewed the Special Report, as if he believed it to be true, inserting the four conclusions of the

* See my Letter and the Editor's Apology, page 119.

† See page 126.

medical officers of the London Eye Infirmary, with regard to the ophthalmia, which conclusion I have already disposed of. The editor, however, declared *his opinion*, that those gentlemen "had succeeded in convicting "me of an unjust assumption of Mr. Saunders's rights," in the different stages of this disease, and he concludes his comments in the following words:—that,

"In the same manner, (as in regard to ophthalmia,) Sir William was indebted to his instructor, for the operation which he has adopted in the congenital cataract of infants, and the soft cataract of adults; his modification of the operation, *whether it be regarded as an improvement or otherwise*, being no alteration of the principle, which alone constitutes the discovery."

It has been shewn, that I have, upon every occasion, acknowledged my debt to Mr. Saunders, for a practical knowledge of the operation for cataract upon children and adults; the contrary cannot indeed be asserted with even a shadow of foundation.

That the principle of Mr. Saunders's operation and of mine, in this species of cataract, is the same, there can be no doubt, as both are effected by the solvent powers of the humours of the eye. This power was, however, well known, long before Mr. Saunders was born: his merit, therefore, consisted in the *application of this principle;* not in its "*discovery*," as asserted by the editor. And, surely, if by a peculiar modification of the operation, with a peculiar instrument, I can, "without inflicting any violence on the organ," as has been proved by hundreds of instances, effect, in one or two operations, and in the short space of five or six weeks, what sometimes required ten or twelve operations during as many months, when the operation practised and recommended at the London Eye Infirmary was pursued, it cannot be denied that I have materially promoted the interests of humanity and of science;—and,

although I may have *affected the interests of the living*, that I have not, as asserted by this editor, "disturbed "the ashes of the honoured dead, set aside the just "claims, or crushed the fair fame of that much-"lamented and eminently-deserving member of the pro-"fession," Mr. Saunders, whose fame, so many have invidiously, and unnecessarily, put in competition to mine.

The assertion contained in the sixth conclusion of the Special Report I deny in the most direct and positive manner. Mr. Saunders could never have either "fully tried or deliberately rejected my ope-"ration," even supposing he had become acquainted with it. Experience, indeed, contradicts the bold assertion. If he *had* tried it, no doubt the operation would have proved as successful in his hands as in mine.

The injustice of the editor of the London Medical Repository towards me did not stop here. Not content with these accusations, he, like his countryman and compeer, the editor of the Edinburgh Journal, also keeps back every thing which could tend to exonerate me from dishonourable imputations, and has published the whole of Mr. Saunders's letter, written in 1809, which I have already been compelled to style "unwarrantable and unjustifiable," and which was written in a moment of irritation, as Mr. Saunders's subsequent conduct and conversation fully proved, without either inserting any part of my letter, which called forth that of Mr. Saunders, my reply to it, or that written to Mr. Saunders, by Mr. Johnson. Had he inserted these letters, which were published with that of Mr. Saunders, in the pamphlet entitled "The Special Report," he well knew that he would have lost the power to injure me.

How far, by the conduct I have just exposed, this

editor has fulfilled the promises held out to the profession in the first number of the London Medical Repository, will be seen by referring to page 68 of that number;—and how far that conduct is in unison with the declaration contained in the "Address to the Faculty," inserted in the same number, will appear from the perusal of the following quotation:—

"*That as their* (the Editors) *first object will be to impart truth*, their opinion "will, they trust, be expressed with *amenity*, and always directed, they hope, "by *candour* and *liberal feeling;* and, when they must point out error or disclose "deception, their comment will go no further than may be requisite to establish "their position."

The editor has, however, expressed

"That he will be as ready to do me justice, as he has been to join in my con- "demnation, whenever sufficient evidence is adduced, to counterbalance that "before the public in the Special Report."

That evidence, I presume, he will not venture to deny has been adduced in this letter; and I therefore demand from him, the justice which is equally due to truth, to my character, and to the profession who have patronized his Journal.

I shall not presume to enumerate all the qualifications which the conductors of reviews ought to possess; but certainly it is in the highest degree important to the welfare of society, and to the reputation of authors, that those who conduct medical reviews, should be candid, honourable men, and that their journals should be free from *party feeling;* for, as the majority of practitioners have not leisure to peruse all new publications, one of their chief sources of information is derived from medical journals. Now, if the editors of such publications, from favouritism to one man, or set of men, do all in their power to misrepresent the conduct of another, who happens to be a competitor; sometimes keeping back his writings from the eye of their readers, lest a review of them should ex-

tend his fame and reputation; and at other times bringing forward other writings as his, which in reality, as well as in their own knowledge, are not so, with the intention of calumniating him, by proclaiming that he had made public his success, while he withheld from the knowledge of the profession the means by which he had *obtained* that success; however such reviewers may gain confidence in their outset, and whatever may be the term of that confidence, they must sink into utter disgrace in the end. Mankind will not for ever be deceived; the still, small voice of truth, will at length prevail; the ephemeral pages will lose the power of poisoning the public mind; and the work and the workmen will be alike degraded in the estimation of every man of integrity and respectability.

It would extend this letter too far to observe upon the whole of the attacks made upon me in different Reviews and periodical publications. Many of them are indeed unworthy of notice; but, from the superior character of the *Quarterly Review*, I cannot pass over in silence, the manner in which my work on Diseases of the Eye has been there reviewed, and associated with the Greenwich Report, as if both were written and published by me.

The two publications are actually reviewed in the same article; and (as in the Edinburgh Medical Journal) it is throughout carefully concealed from the knowledge of the reader, that the Official Papers were published by order of the Directors of Greenwich Hospital, in which publication I was in no degree concerned, but inasmuch as it was the pleasure of the Board to publish, with the other official papers, my letter addressed to them, and written for their perusal.

Had the editor of the Quarterly Review been ac-

quainted with medical subjects, I feel convinced that he would never have permitted such a misrepresentation to appear in his journal. The accusation preferred by this reviewer, of a desire to conceal my practice, appears the more extraordinary, from its being made at the very time that my work on Diseases of the Eye was reviewed, which, as already stated, contains a description of the whole of the operations for cataract performed on the pensioners, with only one exception. The following passage, however, at the conclusion of the Review, plainly marks the hostile spirit with which it was written :—

" It is true that the mode in which the result of Mr. Adams's successful experiments at Greenwich is made public, without a complete description of the nature of the operations performed, and with formal attestations of the truth of the facts adduced, appears to us to be somewhat beneath the dignity of regular practice : but the report of that result being so highly favourable, and so perfectly well authenticated, we have thought it our duty to overcome the reluctance which this approach to the garb of empiricism had created, and to contribute our part towards rendering more public, the merits of an operator so skilful and ingenious as Mr. Adams, now Sir William, has proved himself to be."

I shall conclude with contradicting a report, which has been very industriously circulated,—namely, that, in my communications with the Board, I had not treated my predecessor with the delicacy and respect to which he was entitled, from his skill and his professional eminence. The inaccuracy of this report will be seen, by the following extract from my letter to the Directors, published in the Official Papers :—

" *26, Albemarle-street, Jan.* 9, 1814.

" My Lords and Gentlemen,

" The favourable termination of the trial which you directed to be made, in order to ascertain the comparative success of my new modes of operating for the cure of cataract, with that of the operation of extraction, as it is generally performed, will, I hope, be thought to justify my addressing you on the circumstances of it.

" Although fully aware of the dangers attending the operation of *extraction*, as

usually performed; and apprized, as I was, that the pensioners could no longer be prevailed upon to submit to that mode of operating, from its ill success for the last fifteen or twenty years; I did not conceive, till I perused the Reports of the surgeon of the hospital, that the proportion of failures was so great.

" From the statements which have been made of the success of the practice of extraction, the public have been taught to believe that it possessed all the excellence, of which any operation for the cure of cataract was susceptible. It became, therefore, highly necessary that such an experiment as the present should be instituted; and that, under the immediate superintendence of *impartial* and *disinterested* persons, whose testimony could not be doubted.

" It is, then, with no common satisfaction, that I now request your attention to the comparative results of the different operations, (the *new* and *old*,) as specified in the Official Reports of the physician, surgeon, and apothecary, to your institution; which, with the personal examination you intend this day to make of the two sets of patients, must necessarily establish, beyond all doubt, the decided superiority of my modes of operating, over that which had been previously practised on the pensioners.

" And here I beg leave to repeat the observation I made at my first interview with your Honourable Board,—that it is the *operation*, and not the *operator*, which I deprecate. Were he to adopt my operations, or were I to follow his, the results of the two modes of practice would probably be nearly the same as they are now found to be; nor shall I hesitate to add my firm belief, that superior manual dexterity is not to be found in this kingdom, than is possessed by the operator whose efforts have proved so unavailing, in the many instances submitted to your consideration. It is, I conceive, the want of a personal experience of the superior efficacy of my practice, which prevents his adopting it with the same promptitude as another oculist of long-established celebrity, has done, since he saw me operate; who, before that period, was distinguished by his practice, as well as writings, as one of the warmest advocates of the operation of extraction."

* * * * * * * * * * * * *

FINIS.

Printed by W. Clowes, Northumberland-court, Strand, London.

POSTSCRIPT.

I HAVE just been informed of the death of Mrs. Colkett (late Mrs. Saunders,) which intelligence did not reach me until two months after the first edition of the preceding Letter had been put into the hands of Government, and some time after the present edition had been worked off. This event will necessarily put a stop to the generous intentions of some individuals towards her, namely—to defray the expenses of filing a bill in Chancery, against the six members forming the *Special Committee*, who rescinded the Resolutions of the *General Committee*, which had assigned the annuity to Mrs. Saunders, as an equivalent for the produce of the sale of her late husband's posthumous work; it being the opinion of two eminent Counsel, that either one, or the other, was recoverable for her.