On a new method of extracting in cases of cataract : with reports of fifty-four cases operated upon in succession, from November 1865 to May 1867, in fifty-three of which the lens was extracted, and a successful result obtained / by Charles Taylor.

Contributors

Taylor, Charles Bell, 1829-1909.
Royal College of Surgeons of England

Publication/Creation

Edinburgh : Oliver and Boyd, 1868.

Persistent URL

https://wellcomecollection.org/works/u93jhc8f

Provider

Royal College of Surgeons

License and attribution

This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

ON

A NEW METHOD

OF

EXTRACTING IN CASES OF CATARACT,

WITH REPORTS OF

FIFTY-FOUR CASES OPERATED UPON IN SUCCESSION,

FROM NOVEMBER 1865 TO MAY 1867;

IN FIFTY-THREE OF WHICH THE LENS WAS EXTRACTED, AND A SUCCESSFUL RESULT OBTAINED.

BY

CHARLES TAYLOR, M.D. EDIN., F.R.C.S.E.,

HONORARY SURGEON TO THE NOTTINGHAM AND MIDLAND EYE INFIRMARY.

EDINBURGH: OLIVER AND BOYD, TWEEDDALE COURT.

MDCCCLXVIII.

REPRINTED FROM THE EDINBURGH MEDICAL JOURNAL FOR FEBRUARY, JULY, AND AUGUST, 1868.

A NEW METHOD

OF

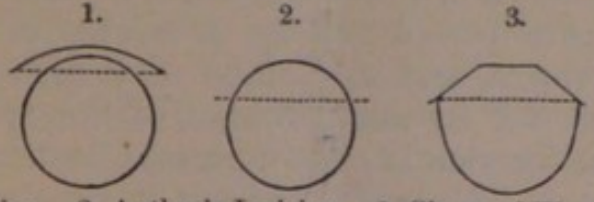
EXTRACTING IN CASES OF CATARACT.

EARLY in the year 1865, dissatisfied with the results of some cases of cataract in which the lens had been extracted by Schufte's method, that I had an opportunity of witnessing, and anxious to avoid that feeling of utter powerlessness which most operators must have felt in the event of any accident occurring during the performance of the ordinary flap operation, I endeavoured to ascertain whether extraction might not be accomplished through a wound so small that there would be no risk in such manipulation of the eye-ball as would be necessary to facilitate the various steps of the operation, and yet large enough to permit the exit of the lens without the introduction of any instrument into the eye, or consequent risk of those disastrous results which I had seen to follow the lifting out of the lens with Schufte's spoons. With this object I made various experiments upon animals' eyes, and performed some operations on the dead subject; thus arriving at a satisfactory solution of the question in the operation, which I have since exclusively adopted in all cases of senile cataract coming under my care, and which I now recommend with much confidence to all who would adopt a method of extracting which is as nearly as may be "danger free."

I forwarded a short notice of this method to Dr Richardson for publication in the Medical History of Nottingham, in 1865, and also mentioned it in a paper published in the *Ophthalmic Review* upwards of a year ago, in the following terms: "Premising an iridectomy, and making the incision with a small ground-down cataract knife, entered in the corneo-sclerotic junction, and emerging at a counter puncture similarly placed, so as to incise a little more than the upper third of the cornea, the opening being well back, and larger than the large one sometimes required in Schufte's operation." —"The eye may be safely fixed throughout the operation. The flap cannot be turned down, and yet if the posterior lip of the wound be gently pressed back, the lens may be coaxed out without passing

any instrument into the eye." My observations had then demonstrated, to my entire satisfaction, that, with the advantages of the enlarged pupil and extended surface for operation, obtainable either by a combined or preliminary iridectomy, the flaccid receding flap, composed of one half of the true cornea, becomes absolutely unnecessary; and that an extended flap-like incision, comprising one-third only of the corneal surface, if made well back in the corneo-sclerotic junction, will suffice for the ready exit of the lens, without the aid of any traction instrument whatever. I found, also, that such an incision yielded more readily to the advancing lens than one more strictly linear in its character, while it was sufficiently slit-like and elastic to close without any artificial apposition or external support, strong enough to resist protrusion by advancing vitreus, and too resilient to permit of accidental reflection. I propose to call this mode of operating "Extraction by Linear Flap," as I think the term expresses its peculiarities better than any other, and will serve to distinguish it from Von Gräfe's strictly linear method, more especially in those points in which it essentially differs, and, in my opinion, possesses some advantages. I must mention that I had fully worked out this method, adopted it in my practice, and demonstrated its advantages to my medical friends, before I had heard of Professor Von Gräfe's modification of linear extraction, and before any account of his experiments had been published. On first hearing of his modified linear extraction, I was under the impression that the two operations were almost identical; but having seen Von Gräfe's operation, I find material differences, although I have no doubt, from what I have since learned, that we arrived at the same conclusions as to the necessity for a modification of Schufte's and the flap operation by a similar process of reasoning, and apparently at about the same time. In my first operations, as the most convenient instrument accessible in a provincial town, I made the incision with a ground-down Zehender's cataract knife, reduced to about the size of the ordinary secondary cataract knives sold in most cases of ophthalmic instruments. I have since used Von Gräfe's knife; but it is quite possible to make the incision with Bader's smallest sized iridectomy knife, cutting gently round from left to right within the prescribed limits. As the risk, even if vomiting occurs, is very slight with this form of incision, I usually prefer to have the patient narcotized. Keeping the lids apart with the stop-speculum, I then fix the eye by seizing the upper border of the external rectus tendon with a pair of forceps, and enter the long narrow-bladed knife in the corneo-sclerotic junction, about the commencement of the upper third, or junction of the upper with the middle third of the cornea, say $2\frac{1}{2}$ or 3 lines lower down than in Von Gräfe's method, and rather more forward in the corneo-sclerotic junction. The site of the entrance puncture must vary somewhat, according to the size of the globe, as a very shallow flap will suffice if the cornea is of average or more

than average dimensions, and a deeper one will be required if it is below the standard size. Care must be taken, in entering the knife, that it is made to penetrate the chamber at once. Any gliding between the layers of the cornea is much to be deprecated, as the consequent want of correspondence between the internal and external wound will be sure to cause disappointment in the subsequent steps of the operation, and the lens will be impeded in its exit by little bands of partially incised corneal tissue occupying the angles of the wound. Having entered the chamber, the knife must be pushed gently across, and made to emerge at a counter puncture similarly placed. The necessity for using a knife very small in bulk, narrow, and sharp-pointed, will here be appreciated, as the resistance offered by the dense tissue to the passage of the knife in this situation is often sufficient to cause slight bending of the blade. It is important that the counter puncture should not be made too far back—an accident very apt to occur, and by which one is betrayed into making an unduly large wound, a considerable portion of which will be situated in the sclerotic, thus giving rise to risk from escape of vitreous humour.[1] A little practice, the avoidance of haste, and occasional apposition of the operator's forefinger, will usually suffice to prevent any trouble on this score. Having completed the counter puncture, I push the knife well through, and, holding it parallel to the iris, cut directly upwards about two lines and a half, or until the edge of the blade is on a level with the central summit of the cornea. It is then turned directly forwards, and the section completed by a gentle sawing movement, thus forming a small, shallow, elongated flap, situated well back in dense tissue, with sloping sides and transverse centre, which last occupies the summit of the true cornea. The aqueous escapes when the counter puncture is made, and unless a preliminary iridectomy has been performed, the iris frequently folds over the edge of the knife. Gentle pressure on the cornea, and careful management of the blade, I have always found sufficient to free it, and enable the operator to complete the section without wounding the iris. The accompanying diagrams show the site of the incision and shape of the flap, in my operation, as contrasted with Von Gräfe's.



1. Von Gräfe's Incision 2. Author's Incision. 3. Shape of Flap in Author's Method.[2]

[1] I must not forget to allude to the diminished risks from loss of vitreus obtainable by the form of incision I have recommended, in preference to one placed further back. I have always regarded the loss of vitreus myself as a serious misadventure, and have so often seen vomiting, serious constitutional disturbance, and consequent increased injury to the eye, caused by its evacuation, that I cannot understand the placidity with which I am aware some operators regard this accident.

[2] The artist has represented the flap rather larger than is necessary.

Having completed the incision, I usually remove the speculum so as to allow the eye to recover somewhat, and a little aqueous humour to collect, and then proceed to the second step of the operation. It is safer now and subsequently to insert only one blade of the speculum under the upper lid, the other blade being supported on the patient's cheek by the finger of an assistant; scarcely any pressure is thus made on the eyeball, and risk of rupture of the hyaloid membrane is considerably diminished.

As the conjunctiva is only incised, and to a very slight extent at the extremities of the wound, there is usually little trouble from hæmorrhage up to this stage; should the incision, however, by accident be placed too far back, and bleeding occur, it is well to apply slight pressure to the eyeball with a pad of cotton-wool, before proceeding to the second step of the operation, which, if an iridectomy has not been premised, will be the excision of a small piece of iris. This is readily accomplished by inserting the forceps into the central portion of the incision, which occupies the apex of the cornea, while an assistant, if necessary, gently depresses the globe. This situation of the central portion of the incision enables the operator to enter the chamber at once, and the difficulties sometimes met with when the forceps and pricker have to be thrust under loose conjunctiva, with its sub-mucous tissue infiltrated with blood and aqueous humour (a source of embarrassment in Von Gräfe's method) are thus avoided. Having introduced the forceps, the blades must be opened and the iris seized near to the pupillary border, gently withdrawn, and divided close to the edge of the section. For this purpose I use very fine-pointed bent scissors, and insert the points just within the angle of the incision; if this is not attended to, the iris is very apt to prolapse in this situation, and to some extent delay the progress of the case as well as occasion a little deformity, which will be noticed afterwards. Having divided the iris at the right angle of the incision, it must be separated gently, so far as may be, from its ciliary border to the opposite edge of the wound, and cut off with the same precautions to secure the small piece so apt to prolapse as before. Should the iris bleed, so as to threaten to fill the anterior chamber, and so obscure the future steps of the operation, it is well to repeat slight pressure with a cotton-wool pad for a minute or two; this will arrest the hæmorrhage, and any blood may then be removed by suction, or coaxed out by manipulation of the eyeball, while the posterior lip of the incision is gently pressed back with the curette. In one case (Mrs N., Case 44), where it was very desirable to enlarge the pupil, I excised a portion of the lower central segment of the iris through the same wound, and at the same time as the upper, with a very good result. The iridectomy is more readily performed, and the excision of a smaller portion of iris will suffice, if the pupil is well dilated prior to the operation. This is best effected by a strong neutral solution of atropine, applied the night

before, and repeated in the morning. The pupil contracts on the escape of the aqueous humour, but not so readily as it would, if not previously dilated; and the subsequent dilatation on which the success of the operation may in some degree depend, is afterwards much more easily maintained. I have, in several cases, where great age, marasmus, arterial degeneration, or the existence of other causes was likely to impede the progress of the case, or otherwise vitiate the result, adopted Mooren's precaution, and performed the iridectomy six weeks before extracting, and in very unfavourable cases, as in the eye remaining to be operated on in Smith's case, where suppuration threatened for twenty-four hours after the extraction. I have excised a large piece of iris both from the upper and lower segment of the pupil as a preliminary precaution. This division of the operation of extraction for cataract into two portions, with a prolonged interval, is, however, manifestly inconvenient both for the poor, who can ill spare the time required for two operations, and also for the wealthy, who often have a considerable distance to travel. Sometimes, also, from a want of correspondence between the wound made in extraction and the smaller one used in the iridectomy, I have found the iris more apt to prolapse at the corners than if excised in proportion to the length of the incision at the time of extraction. In some cases, however, a preliminary iridectomy has many advantages; by it the operator becomes thoroughly acquainted with his patient, and he is enabled to form a correct opinion as to his behaviour under extraction—a matter of no slight importance, as all accustomed to deal with such cases must allow. The important question as to the use or omission of chloroform may also then be decided; and, if administered, its effect upon the patient at the time, and subsequently, so far as vomiting is concerned, may be noted and utilized to the evident advantage of both patient and operator. In many cases also, where cataract is complicated with other manifest or incipient diseases of the eyeball, tension is reduced, and the tendency to cyclitis diminished by a preliminary iridectomy; subsequent extraction is easier to perform, and risk from bruising the iris abolished. The operation is thus reduced to its simplest elements, and chances of failure materially lessened by eliminating causes of accident. Having completed the iridectomy, the operator should seize the globe with forceps close to the cornea, above the insertion of the inferior rectus tendon, depress the globe with very slight pressure, and incise the capsule freely, taking care to pass the pricker beneath the lower segment of iris, and open the capsule from bottom to top, in two or three places. In withdrawing the pricker, it should be gently inserted under one of the angles of iris left by the excision, and drawn to the extremity of the other, so as to lay the capsule freely open, on a level with the equator of the lens. It is important to open the capsule in this situation, as I have more than once seen the exit of the lens

retarded by little undivided shreds of membrane occupying the angles of the wound. Not unfrequently the lens comes forward, and is extruded immediately the capsule is incised; but, if from any cause it should be retarded, it will be necessary to make pressure on the globe, while the posterior lip of the wound is slightly pressed back with a small spoon or curette. Pressure is best made with the ordinary strabismus hook, placed in contact with the globe, below the insertion of the inferior rectus tendon, about four or five lines from the margin of the cornea. It must be moderated according to circumstances, should cease when the lens is partially extruded, and evacuation completed either by the insertion of a sharp hook into the lens, or by gentle pressure on the corneal surface, so as to lift forward its lower border as it is in the act of escaping. Cortical fragments, if any remain, may usually be extruded by slight pressure; but if this does not suffice, I usually place a temporary pad of cotton-wool on the eye, and allow the patient to recover from the chloroform narcosis, when the aqueous will be re-secreted, and any fragments concealed by the iris may be washed into the pupillary area by slight pressure on the globe external to the lids, and evacuated by gently opening the wound with the curette. If any remain, I remove them with Mr Teale's suction curette (the sucker must always be used with great caution, otherwise hyperæmia ex vacuo will be induced), and then tear across or withdraw any little fragments of capsule with iris or canula forceps. By thus carefully removing the capsule subsequent to the extraction of the lens, I believe all the advantages obtainable by the evacuation of the lens, with its capsule entire, as in Pagenlecher's operation, are obtained; but if the operator should desire to remove the lens and capsule in its entirety, as in that operation, I believe the form of incision which I have recommended is the one best adapted to secure a safe and perfect result. Should the lens, from adhesions or other causes, resist such pressure as may be safely employed without the risk of rupturing the hyaloid membrane, as has happened in some of my cases, I extract it with a small skeleton spoon.[1] From the large size of the wound this becomes very easy, and as the flap yields readily, the lens is easily tilted forwards, and there is no necessity to incur the risks inseparable from the insertion of the spoon too far back into the vitreous cavity.

If it is desirable to extract by the lower section, the same form of incision may be employed. The operator seizes the conjunctiva above the cornea in its vertical meridian with toothed forceps, while an assistant draws down the lower lid, and assists in fixing the globe. The lower section is preferable in cases where the lens is superficially softened, as any soft cortical matter left behind in the eye will gravitate to the bottom of the anterior chamber, pass harmlessly through the coloboma iridis, and either undergo absorp-

[1] This is a mere rim of flattened steel wire reduced to extreme tenuity and shaped like the rectus spoon made for me by Messrs Wood of Manchester.

tion, or be washed out in the gushes of aqueous humour. The risk of its lodging behind the lower segment of iris and setting up subsequent irritation is thus avoided, but the section is less sheltered, and the coloboma uglier and more disturbing to vision.

The operation completed, I apply a drop of solution of atropine in the corner of the eye, and cover the lids with a pad of fine cotton-wool dipped in, but not saturated with, cold water. If sodden, the pad is heavy, irregular, and unmanageable; but just moistened on the surface, it fits accurately into the orbital cavity, and speedily dries into a thin smooth film closely bedded to the surface of the lids, absorbing moisture, insuring equable support, a regular temperature, and the exclusion of light. It must be secured *in situ*, with gentle pressure, by thin strips of soap plaster, spread on unglazed calico (which adheres without warming). I find this by far the best dressing. Pressure can be accurately applied by strips fixed to the forehead and cheek, and, if necessary, by an additional broad strap passed from temple to temple I apply atropine and compress to both eyes, with a view of preventing the rolling of the eyeball and sympathetic action of the pupil, which takes place in concert with its fellow if one eye is uncovered. Over the compress I usually fit a strong pasteboard shade on to the forehead, with a little wool intervening, and extending to the tip of the nose. This will protect the eye from any accidental blow or involuntary motion occurring during the sleep of the patient. Any kind of compress bandage, if required, may be readily applied over the pads and plaster. If there should be much pain complained of after the operation, and it should not cease in a few hours, I give a small dose of morphia, and repeat it if necessary. Should this not suffice to relieve the patient, I apply four leeches to the temple, and as fast as one drops off replace it with another, until either the symptoms are relieved, or it is evident that no benefit may be expected from further depletion. Occasionally, the injection under the skin of the lid of $\frac{1}{6}$ to $\frac{1}{4}$ of a grain of morphia will afford immediate relief; and if there is much heat complained of, or perceptible increase of temperature, a linen compress must be applied, wet with iced water, and kept cold by a small piece of ice placed in the corner of the orbit, and re-applied as fast as it dissolves. A brisk purge is sometimes of service, and blood, in cases favourable for depletion, may be taken from the arm. Other symptoms must be treated as they arise on general principles. If swelling of the lids comes on, with profuse semi-purulent secretion, the compress bandage, as advised by Von Gräfe, must be applied, and changed every four hours, a hot aromatic poultice being applied for twenty minutes at each change.

The swelling of the lids may also be treated with a solution of nitrate of silver, in equal parts of spirit of nitric ether and distilled water (10gr. to ʒj.), or by the application of tincture of iodine. Chronic irritation may be relieved by similar means—mercurial inunction with belladonna over the brow, and the evacuation of the

aqueous humour, prolonged rest in the recumbent posture, or a second iridectomy downwards. If any capsule is left, it is better not to attempt its removal for two or three months. As to results, since devising the above described method, I have operated on 54 cases of cataract in succession, with only one complete failure.

The ages of the patients range from 5 months to 86 years. The majority, however, were persons of great age, several verging on 80, six being upwards of that age, and four upwards of 85 years. Some were suffering from marasmus and constitutional cachexiæ, others from various diseases of the eyeball, tending to vitiate the results of an operation. These persons were operated upon in succession as they applied, no selection was made, and I have never refused a case. Indeed, two or three, including the one complete failure (occurring in a feeble woman, æt. 86, blind for twelve years with degenerated cataract and firm synechiæ), had been declined by other surgeons. In two cases (æt. 65, No. 23, and æt. 68, No 17) healing was protracted, and the patients remained a month under treatment. One (æt. 83, Case 18) died from apoplexy, the result of epilepsy, thirty hours after the operation, when the wound was found healed, media clear, and result of operation excellent. This proves that the wound, even in persons of great age, will heal in twenty-four hours. In one (æt. 65, Case 25) suppuration threatened for twenty-four hours, the patient ultimately recovering with a closed pupil, and fair chance of restored vision by a second iridectomy downwards. The remainder recovered without a bad symptom, and were discharged on the seventh day; such as were free from remnants of capsule or amaurotic complications being restored to excellent vision. Some have been too recently operated upon to permit a fair record of the optical results at present. In two cases the lens was removed by the scoop, and in seven extracted by Mr Teale's suction method. Brief reports of the whole of those cases operated upon by myself since November 1865 will be given in the concluding part of this paper. I have preferred to give *all* the cases, including the suction and scoop extractions; and, where there can be no objection to this being done, have followed Dr Mooren's example, and appended the names and addresses of the patients, so that there may be no room for doubt or cavil as to the results.

Case 1.—Paul Mellors, of Mansfield, a healthy man in his eighty-fifth year, came under my care on November 20, 1865; the right eye was then quite blind from fully formed cataract, and had been in this condition upwards of four years; as the left had latterly failed considerably in consequence of incompletely formed cataract, he applied for relief. Both pupils dilated moderately with atropine, and perception of light was good. On account of his great age, I determined to give him the benefit of a preliminary iridectomy, and accordingly excised a portion of the upper segment of the iris at once. On January 5, 1866, I extracted the lens by the linear flap method without chloroform the incision was rather far back, and, in consequence, bleeding from the wounded conjunctiva filled the anterior chamber; the blood, however,

was removed without difficulty; the capsule incised and lens extracted, atropine was applied on the second day, and the eye opened on the fourth; patient discharged on the 7th. Result, two months later:—reads No. 1, and has excellent distant vision with appropriate glasses, good vision without any glass, and the coloboma iridis, being concealed by a fully formed arcus senilis, is not noticed without special scrutiny.

Case 2.—Mrs Richmond, of Carlton, a feeble decrepid old lady, with thin wrinkled skin, in her 85th year, came under my care in April, suffering from complete blindness of four years' duration, caused by fully formed cataracts in both eyes; as the orbital apertures were very small, and the lids overlapped the eye, I thought the result as to sight would be rendered much more certain by a preliminary inferior iridectomy, which was accordingly done on both eyes on the 7th of April without chloroform; the conjunctiva proved to be friable in the extreme, and I found it very difficult to fix the eye in consequence. No bad symptom followed; and on the 24th of May, I proceeded to extract by an inferior linear flap, first on the right eye, then on the left eye, again without chloroform. The patient bore the operation on the right eye very well, but gave considerable trouble when the left lens was being extracted. The operation was, however, completed without misadventure, and some cortical lens matter which floated into the chamber effectually removed by Mr Teales' suction curette. No pain or bad symptom followed, and the eyes were consequently not opened until the seventh day. Wounds healed, sight excellent; but the lower lid of the left eye was inverted, and the lashes playing upon the site of the recent incision had caused considerable irritation. As she refused any further operative procedure, I was obliged to fasten the lid down with plaster, and, owing to neglect during my absence, the lashes still occasioned considerable trouble. The patient regained strength, however, and the lid recovered its tone in a fortnight more, and the result was excellent. With suitable glasses has excellent distant vision, and reads minion type; ten days after the operation she threaded a stocking-needle without glasses, and, tying it in, forwarded it to a sceptical friend of hers in Nottingham. My reason for operating upon both eyes at once in this unpromising case was, that if I operated upon one and failed, she would not have had the other touched; if I had succeeded, she would have been too well satisfied to undergo any further trouble: by doing both at once I doubled my chances of success, for one might have failed and the other succeeded; and if both had failed she would not have been much worse off, having been quite blind for four years when I first saw her.

Case 3.—Mary Kirk, Shardlow, in her 65th year, came under my care with complete cataract in the right eye, nearly formed in the left; extraction of right lens by my method under chloroform on July 30. The iris flapped over the knife, but, by gentle pressure upon the cornea, its edge was liberated and section completed; capsule lacerated very freely, and the lens extruded by alternating pressure on the posterior lip of the wound and lower border of the cornea; some cortical matter floated into the chamber, and was very distinctly seen by artificial light and focal illumination. As she had partially recovered, and was unsteady, I allowed half an hour to elapse, and the aqueous to re-secrete, when I opened the wound with the curette, and let out the lens matter and aqueous together. This patient for two or three days after the operation exhibited various delusions, rose in the middle of the night, and gave some anxiety and trouble; these symptoms passed off, however, and she was discharged on the seventh day with the wound perfectly healed, very slight injection of the eyeball, and good vision. Result, two months later,—can read ordinary type with appropriate glass, and has fair vision without.

Case 4 and 5.—William Price, Strelley, in his 66th year, consulted me with fully formed cataracts in both eyes, and consequent complete blindness two months ago (June 3), when I removed a portion of the upper segment of the iris from each eye; extraction left eye August 1. My method without chloroform; owing to adhesions, I found it impossible to start the cataract by

pressure, and therefore introduced Mr Critchett's spoon and extracted the lens, a proceeding which I found very much facilitated by the large incision which I have already described: discharged on the seventh day; wound perfectly healed; sight excellent. I subsequently ascertained that he had excellent distant vision, and could read diamond type with appropriate glasses. Extraction right eye, October 8, linear flap method, lens extruded without difficulty, pupil black, media clear: discharged on seventh day: result one month later,—reads diamond type, and has excellent distant vision with glasses.

Case 6.—Mary Smith, a pauper, in her 83d year, with marked arcus senilis, and suffering from various symptoms of fatty and senile degeneration, came under my care on April 25, suffering from failing vision, the result of fully formed cataract in the left eye, and incomplete opacity of the right lens. Iridectomy left eye at once without chloroform; the iris was adherent to the capsule of the lens, and, when a portion of the upper segment was removed, left a large patch of uvea. This patient was subject to most violent fits of epilepsy, during which she lay for hours between life and death: as there was usually a pretty good interval between the attacks, I selected to operate two days after her recovery from a severe fit. Extraction June 25, by linear flap without chloroform, the lens was removed without difficulty, leaving the pupil clear and bright, and she could recognise me as I bent over the couch. Thirty hours after the operation, this patient had a most severe epileptic seizure, and died before a medical man could be summoned. On examining the eye in the presence of her medical attendant and his assistant, thirty-six hours after the operation, we found the chamber filled, wound healed, injection confined to its neighbourhood, pupil clear, and iris natural,—evidently, so far as the operation was concerned, a most successful result.

Case 7.—Jane Bawn, Drake Street, in her 66th year, underwent a preliminary iridectomy when she came under my care two months ago (October 2, 1866), suffering from complete blindness, the result of fully formed cataracts of a deep brown, almost black colour, in both eyes, which had existed three years. Extraction right eye, October 16, without chloroform, by linear flap; lens removed with facility. When I was sucking out a small piece of cortical matter, she suddenly turned the eye down, and squeezed out a few drops of vitreous. No bad symptom followed, and she was discharged on the seventh day with black pupil, clear media, and excellent vision. Result,—with glasses reads diamond type, and has excellent distant vision. (I have since operated upon the left eye of this patient with excellent result.)

Case 8.—Thomas Shaw, Mount Street, in his 60th year, came under my care on October 2, suffering from fully formed cataract in the right eye, and imperfect vision in the left, from an early stage of the same disease. Extraction without chloroform, August 14, by my method, lens extruded without difficulty, no bad symptoms, pupil black, media clear. Discharged on the seventh day; with glasses reads newspaper type, and has very excellent distant vision. (I have since operated upon the left eye of this patient with excellent result.)

Case 9.—John Sibbert, Beeston, in his 55th year, came under my care with fully formed cataract in the left eye, and failing vision from the same disease in the right. Extraction, October 2, by linear flap method without chloroform; pupil black, media clear; no bad symptoms. Discharged on the seventh day. Result two months later,—reads pearl type with glasses, and has excellent distant vision. (I have since operated upon the right eye with good result.)

Case 10.—William Gaskin, a pauper of Basford Union, in his 53d year, formerly a soldier, and long resident in India, applied to me suffering from increasing dimness of vision, caused by imperfectly formed cataracts in both eyes. In September last I opened the capsule at once, and extracted under chloroform by linear flap on November 23. The lens was removed without difficulty, but some softened matter floated into the anterior chamber. I therefore left him to recover from the chloroform, and when it was washed by aqueous into pupillary area, removed it by suction, leaving the pupil black

and free. Discharged with excellent sight on seventh day. I subsequently ascertained that he could read diamond type, and had excellent distant vision.

Case 11.—Mrs B., Shakespeare Street, Nottingham, in her 63d year, came under my care suffering from imperfectly formed cataracts in both eyes, the right being more advanced than the other. As the opacities affected vision very materially, although neither lens was sufficiently opaque to render extraction safe, I determined to do a preliminary iridectomy in the right eye, so as to diminish the danger of the swollen lens pressing upon the iris, then open the capsule and extract a fortnight or three weeks later. This was accordingly done, and on the 18th of November I extracted the lens by my method without chloroform. Pupil black, media clear, no unfavourable symptoms followed. The patient got up on the seventh day with useful sight, and some months later with glasses could read diamond type with facility, and had excellent distant vision. The coloboma iridis is perfectly concealed, and it would be impossible to say which eye had been operated on without special scrutiny.

Case 12.—Samuel Swincoe, in his 68th year, a pensioner, Burton-Joyce, came under my care on October 3. This patient, a tall powerful man, had resided thirty years in India; he was an irritable inflammatory subject, and the eyes resented any interference by immediate swelling and inflammation. He had fully formed cataract in the right eye, and the left had been operated on for cataract seven years ago. He states that, after the operation, he was laid up seven months. At present, the pupil is drawn up and partially closed, and though he can see to get about, he has no useful vision for small objects. I therefore advised him to have the right lens extracted, which was accordingly done by my method without chloroform on December 11. The patient was most unruly, cried out and endeavoured to close the eye as the knife passed into the chamber, so that I had great difficulty in completing the operation. It was finished, however, without misadventure, leaving a black pupil and clear media. No bad symptoms followed. Patient got about on the seventh day, and was discharged on the tenth. He caught cold going home, and suffered for a month from general conjunctivitis. This, however, passed away. The eye is now perfectly clear, and pupil black; his sight is excellent for distance, and he reads newspaper type with No. 2½ biconvex.

Cases 13 and 14.—Joseph Soar, in his 68th year, Ashton-on-Trent, Derbyshire, blind from fully formed cataract in the left eye; vision failing from the same cause in the right: extraction by linear flap left eye on November 16, with chloroform. Operation completed without misadventure; no pain or other bad symptoms followed, and the patient was discharged on the seventh day; pupil black, media clear. A few weeks later he had recovered useful vision with this eye, and with No. 2 biconvex could make out words of No. 10 pica.

The same patient, suffering from symptoms of senile degeneration and general cachexia, came under my care on May 5, to be treated for cataract in the left eye. Extraction by linear flap, July 24. The lens was extruded without difficulty under chloroform, and some portions of cortical matter removed by curette. As he did not bear the chloroform very well, I left a small piece of capsule to be subsequently dealt with. The wound was perfectly healed, and result excellent, with exception of capsule above referred to, on the seventh day, when he was discharged. Shortly after his return home, this patient had an attack of apoplexy, followed by hemiplegia, and has since been confined to the house, so that I have had no further opportunity of testing vision, or removing the offending capsule.

Cases 15 and 16.—Henry Holroyd, 20 years of age, a pauper lunatic, Sneinton Asylum, blind from fully formed cataracts in both eyes. Extraction left eye by linear flap under chloroform. Operation completed without misadventure, although the curette had to be used on account of iritic adhesions. Patient had no pain, and, on recovery, did not know which eye had been operated on. He remained in bed seven days, and was then discharged. Extraction was performed on the right eye two months later with equally successful result. As he is an idiot glasses are of no service to him; but vision with either eye for all purposes is excellent.

Cases 17 and 18.—Samuel Gabitass, Stockwellgate, Mansfield, æt. 65, blind for two years from fully formed cataract in both eyes. Extraction, right eye by linear flap, November 19th, under chloroform; operation completed without misadventure; pupil black, media clear. The chloroform caused free vomiting, and he was quite insane for some time after recovery from its influence. Being excessively deaf, he was also very difficult to manage. No bad symptoms followed, and he was discharged on the seventh day, with the pupil partially occluded by a small piece of capsule. A month later, this was removed, and he recovered useful vision without glasses.—This poor fellow again came under my care, and underwent an inferior iridectomy on the left eye, in June 1866, his general health and condition being such as to render the success of an extraction almost hopeless. He suffered from a distressing cough and asthmatic difficulty of breathing; was very marasmic, feeble to a degree, and completely deaf. As he could not hear any directions that might be given to him, it was necessary to operate with chloroform; and I ascertained when the right eye was operated on, that this agent, for long after its narcotic effect had passed away, caused a species of mild insanity. A most prominent brow, deeply-sunken eyeball, and the existence of synechiæ, rendered the operation one of unusual difficulty. Extraction, August 1st, inferior section, linear flap; the eyeball was so sunken, and conjunctiva so thin, that it was necessary to fix it with my fingers, and the slight pressure so occasioned ruptured the hyaloid membrane, and set the vitreous free, which gushed out, leaving the lens suspended by adhesions to the iris. I endeavoured to extract it with a sharp hook, but was unable to do so, and ultimately removed it with the scoop, closing the wound, and applying a compress bandage. On examining the eye three days after the operation, I found the lips of the wound sodden with aqueous, which drained slowly away; this condition continued with scarcely an attempt at healing for nearly three weeks, and it was upwards of five before it closed, the compress bandage being very tightly applied the whole time. Ultimately, the wound healed, the anterior chamber filled, and result, but for opacity in site of the incision, would be very good. The cornea opposite the pupil is quite clear, and iris natural; but the pupil is blocked by a piece of capsule; this I removed a fortnight ago (16th May 1867), and, although intolerant of light at present, he has useful vision for ordinary purposes with this eye.

Case 19.—Thomas Hollis, aged 83, a pauper, came under my care, suffering from cataract fully formed in the right eye, and in process of formation in the left, on the 9th of August. Extraction, right eye on the following day by linear flap method, under chloroform. On removal of the lens, the cornea collapsed completely, so that the eyeball was shaped like a bird's nest, and the aspect of the case most unpromising. On recovery from chloroform, this patient, who, I now learned for the first time, was suffering from senile dementia, manifested various delusions, was violent if interfered with, and several times removed his bandages. His recovery, however, proceeded without interruption; and on the seventh day, he began to get about with a shade. The ultimate result in this most unpromising case was excellent, the patient, now blind in the right eye, being able to read newspaper type with appropriate glass, and possessing excellent vision for ordinary purposes without any glass at all.

Case 20.—Thomas Smith, aged 65, suffering from senile fatty degeneration and the effects of alcoholism, with flushed irritable skin and strong inflammatory tendency, came under my care on June 6th; both pupils were occupied by greenish-looking opacities, and the eyeball itself was traversed by tortuous veins, and had altogether the appearance we often see in cases of sclero-choroid posterior, and incipient glaucoma. The iris dilated, however, slowly under the action of atropine, and tension was normal; iridectomy upwards in both eyes on June 7th. Extraction, right eye, August 12th; my method without chloroform; the lens, which was undergoing partial liquefaction from degenerative changes (Morganian cataract), escaped with ease, leaving a small piece of capsule in the pupillary area; this I endeavoured to remove, but was unable to do so from strong action of the orbicularis, rolling of the eyeball, and general unruly conduct of the patient. I therefore left it to be dealt with hereafter,

feeling pretty confident of a successful result. During the night, he disturbed the house and alarmed the other patients by loud cries and screams uttered while partially asleep, and his wife informed the nurse that he had commonly done so under excitement ever since his head was injured by a kick from a horse some years ago. It is probable that the eye was injured during one of these paroxysms, as the bandage was found disarranged; and on my visit in the morning, he complained of great pain, and I found the face much flushed, head very hot, and eyelid swollen. I therefore ordered four leeches to the temple, replacing them until twelve had been used, applied ice to the eye, and injected morphia in the neighbourhood of the lid. He was much relieved the following day; and on examining the eye the day after, I found a small streak of pus along the edges of the wound, which, forming the initial step of a process of suppuration, had evidently been arrested by treatment. He ultimately recovered with a clear cornea, iris of natural colour, and a pupil closed with lymph and exudation. In the left eye, I have done a large iridectomy downwards, in addition to the one already performed upwards, and still hope, in spite of manifold contra indications, to secure a successful result. (Since this report has been sent to press, I have made an artificial pupil in the eye previously operated on. Apparently, from constitutional causes, intense reaction followed, and the eyeball has since shrunk.)

Case 21.—Henry Butler, aged 64, from Grove Street, Derby, applied to me in November 1865, suffering from imperfectly formed cataract in the left eye, and fully formed in the right, which I extracted in the following manner:—I made a very small incision in the corneo-sclerotic junction, hooked out a portion of the upper segment of the iris, and cut it off; closed the eye, and half an hour later, finding the chamber refilled, extracted by linear flap; eye opened, and atropine applied on fourth day; patient discharged on the seventh. Two months after the operation, I found sight obstructed by a piece of capsule; this I removed, and, four months from date of extraction, found that he could read diamond type, and had excellent distant vision with appropriate glasses. (I have since operated upon the other eye with equally successful result.)

Cases 22 and 23.—George Cammish, aged 20, Scarboro', a healthy man, came under my care on the 6th of April. My attention was directed to this patient by a surgeon whom I met in consultation at Scarboro'. He was a poor lad who had been born blind, and, when I first saw him, had perception of light, but nothing more. The pupils, which were dilated with atropine, were completely blocked up with fully formed cataracts. In spite of nystagmus, and other indications of amaurotic complication, I thought it worth while to extract, and accordingly brought him with me to Nottingham. Extraction under chloroform, linear flap, left eye, on April 6th; owing to very tough capsule, it was necessary to use the canula forceps, to get out remains of lens and cortical debris. Atropine introduced on third day, eye opened on the sixth, wound healed perfectly, pupil black and clear; no trace of injection, except in immediate neighbourhood of incision; could see large objects moving about, and pointed to a white handkerchief a few yards distant. Lens of right eye extracted on April 18th by linear flap. A remarkably tough, leathery piece of capsule had to be extracted with iris forceps, leaving a perfectly clear pupil; no bad symptoms followed, wound perfectly healed on the fourth day; patient went out on the eighth. On subsequently examining the eyes with the ophthalmoscope, I found the optic disc affected with white atrophy, though his habit of rolling the eyes rendered an accurate inspection very difficult. Result: he can distinguish colours, large objects as shadows, finds his way about, and enjoys a bright sunlight, and the firework exhibitions with which the inhabitants of Scarboro' are regaled during the season; glasses of no service, media in both eyes perfectly transparent. (I have since heard that his sight has very much improved, and that he can recognise large objects at some distance.)

Cases 24 and 25.—John Selby, a postman, æt. 65, came under my care on the 5th of May, with fully formed cataract in the right eye, as the left was failing from the same cause; and the patient, a stout, flushed, plethoric man, with fully formed arcus senilis, and other indications of fatty degeneration and

general inflammatory tendency, I determined to give him the benefit of the preservative influence of a preliminary iridectomy, and accordingly excised a portion of the iris in an upward direction at once without chloroform. On the 20th of April, I extracted by linear flap, under chloroform; the lens emerged with facility; but as he did not bear the chloroform well, I allowed him to recover fully from its influence before removing some small pieces of cortical matter which were detached, and floated into the anterior chamber. The patient had no unfavourable symptoms, and was discharged with the wound perfectly healed; black pupil and transparent media on the seventh day. On testing sight with glasses some weeks later, I found distant vision very good, and he could read No. 6, or newspaper type, very fairly. On examination with the ophthalmoscope, I found a patch of white atrophy (myopic crescent) to the nasal side of the optic nerve; and on inquiry, learned that he had always suffered from short sight. Extraction, left eye linear flap, under chloroform, April 12th. The operation was completed without misadventure. Patient had no bad symptoms, and was discharged on the seventh day. Optical result is not recorded, as the pupil was blocked with a piece of capsule, covered with softened lens matter, which it was found impossible to remove at the time of the operation. This I removed three days since (3d June 1867), and he has now very clear vision with this eye, though it is of course too early to test his sight with glasses. (This man can now read manuscript, and has resumed work as letter-carrier.)

Case 26.—James Bush, a pauper, York Street, 68 years of age, came under my care early in May 1866, suffering from blindness, the result of completely formed cataracts in both eyes. This poor man was a most unfavourable subject for operation, being wasted and feeble to a degree, hemiplegic, and suffering from paralysis agitans, which affected the paralyzed side only, and became violent on any excitement. He was also unable to lie down from extreme difficulty of breathing, and persistent cough. In spite of some fear as to the action of chloroform, I administered a little, and excised a portion of the inferior segment of each iris. As some alarming symptoms arose, however, I was obliged to perform the extraction without it, which was done on the 25th of June, on the left eye, by an inferior linear flap. Violent and untrollable jactitations of the paralyzed side arose directly the operation was commenced, and continued throughout, causing slight loss of vitreous; but the lens was completely extracted, and the pupil left black and clear. On account of the loss of vitreous, and because I feared insufficient reparative power, a compress bandage was applied at once. On opening the eye a week later, I found the wound in *statu quo*, the aqueous dribbling away, and not the slightest tendency to heal. It was not until the compress bandage had been carefully applied for a month, and wine and stimulants given, that the wound closed. With appropriate glasses, has very good distant vision, and can make out large type. Pupil black, media clear.

Case 27.—Joseph Greenwood of Mansfield, a worn-out old man, in his 67th year, came under my care, suffering from fully formed cataract in the right eye, and partial opacity of the lens in the left. Extraction by linear flap, right eye, on 27th July, under chloroform—a superior iridectomy having been performed two months previously. The cornea was extremely thin, and became so wrinkled when incised, that I am convinced an ordinary flap would have been completely retracted; the margin of dense corneo-sclerotic tissue which forms the edge of the flap in my operation, however, rendered any fears on this score superfluous. The lens was extracted without difficulty, and some cortical matter sucked out. No bad symptoms, and the patient was discharged on the seventh day, with the wound perfectly healed; pupil black, and media transparent. This old man, who is now blind in the left eye, has excellent distant vision with the one operated on, and can distinguish small objects with a pair of glasses he borrowed from another patient of mine. I have not had an opportunity of testing his reading power. (I have since operated with excellent result upon the other eye of this patient.)

Case 28.—Mary Bramley, Sneinton, 59 years of age, came under my care six weeks ago, when I performed a preliminary iridectomy on the right eye, the site of a fully formed cataract, the left being affected in a similar way but to a slight degree. Extraction without chloroform, Oct. 10th, linear flap; lens extruded without difficulty; no misadventure; a small piece of capsule, which I could not remove, I cut across, and left to shrink; patient got up on 7th day, did slight jobs in the house, and was discharged on the 12th. Result three months later: with appropriate glasses reads diamond type, and has excellent distant vision. The coloboma is quite concealed by the upper lid, and no one would know the eye had been operated on without special scrutiny. The piece of capsule disappeared from the field of vision.

Case 29.—Mr William G., Lenton Street, Nottingham, aged 62. This patient, a stout plethoric man, with red congested eyes, and greenish-looking opacities of the lens, came under my care in October 1866. As the case was not very promising, I did an iridectomy upwards on the third of that month, and did not extract until the 19th of December. The lens was removed by linear flap under chloroform; the patient did not know which eye had been operated on; he had no pain, and got about again on the 7th day. Later, I found that, with suitable glasses, he could read diamond type, and had excellent distant vision. (I have since operated, with excellent result, upon the other eye of this patient.)

Case 30.—John Hague, aged 63, North Muskham, came under my care in January 1867, suffering from slightly formed cataracts in both eyes. Although not blind, his sight was interfered with, and as time was of consequence to him, I lacerated the capsule in the right eye at once, and extracted on the 29th by linear flap, under chloroform; no bad symptom followed, and he was discharged on the 7th day. Three weeks later: read diamond type with No. 2 biconvex, and had excellent distant vision with No. 4.

Case 31.—Mrs O., Worksop, aged 64, consulted me on account of imperfect vision in left eye from commencing cataract, and complete blindness from fully formed cataract in the right eye. Extraction, right eye by linear flap, February 26th, under chloroform; slight vomiting followed the operation. Pupil black, media clear; no pain or other bad symptoms followed, and the patient was discharged on the 7th day. Some weeks later, read bourgeois type with No. 2 biconvex, and has excellent distant vision with No. 4. A slight film of capsule still remains in pupillary area. (N.B.—On removing this two months later, intense iritis was set up, and followed by completely closed pupil.)

Case 32.—Mrs Hodgkinson, aged 86, a feeble old lady with thin flabby skin, came under my care on March 6th. She was suffering then from granular lids, irritable conjunctivæ, and profuse lachrymation. She had suffered from iridochoroiditis, and been blind for twelve years from fully formed cataracts in both eyes, which were undergoing calcareous degeneration on the surfaces occupying the pupils. The palpebral apertures were the smallest I ever saw, measuring exactly from the internal to the external angle five-eighths of an inch; the eye itself was proportionately small, and the anterior chambers all but abolished; the pupils were adherent by their internal borders to the capsule of the lens, and consequently did not respond to the instillation of atropine. Extraction, right eye, April 9th, linear flap, under chloroform. In spite of the many difficulties attending this operation, it was completed successfully. On recovering from the chloroform, the patient commenced coughing violently, which continued until vomiting with considerable straining was induced, which at last caused rupture of the hyaloid membrane and a gush of vitreus. I applied a compress bandage, and administered remedies with a view of checking the vomiting, with but slight effect. After remaining an hour, I directed her friends to leave her undisturbed until my return,—an order which they did not obey, as I found, three hours later, that the patient had walked up a flight of stairs, and was then in bed. The exertion this necessitated appeared to have caused rupture of one of the previously diseased choroidal vessels, as blood mingled with vitreus was then flowing from the eye. Slight suppuration of the flap followed, and the patient had considerable pain, but the wound ulti-

mately closed, and the patient now, although with an opaque cornea and no improvement to vision, is not much worse than before. (The eye has since shrunk.)

Case 33.—Mrs Barnes, aged 78, suffering from failing vision from imperfectly formed cataract in the right eye, blind from fully formed cataract for two years in the left. Extraction, left eye, under chloroform, on the 1st of May, linear flap. On incising the capsule, a quantity of milky fluid escaped, showing that the lens was undergoing morgagnian degeneration; the hard small nucleus turned on its axis, and presented sideways, so that I was obliged to depress one border with the curette before it could be extruded. This patient was a very feeble inflammatory subject, but she recovered without a bad symptom, and was discharged on the 7th day with excellent perception of objects, and clear brilliant eye. The operation has been too recently performed to permit of testing vision with glasses. (She cannot read, but has since recovered very excellent vision with this eye, and is now quite blind on the other.) *P.S.*—July 1868.—I have since operated on the other eye, and she has now excellent vision with both.

Case 34.—John Augustine, aged 66, suffering from failing vision in the right eye from choroidal atrophy and lenticular opacity, with adhesions in the left. There was every reason to believe that this eye was also the seat of amaurotic changes, and I therefore held out but little hope of benefit from an operation; as the patient wished it, however, I extracted, by linear flap, under chloroform, on the 1st of May; the lens, which was singularly bulky, was retained by fully formed adhesions to the lower segment of iris; I therefore lifted it out with Mr Critchett's spoon. No bad symptoms followed, and the patient resumed his occupation as salesman in a shop on the 7th day; pupil perfectly black; media clear; sight but slightly improved, owing no doubt to retinal change, which future opthalmoscopic examination will reveal. (I have since ascertained that the retina and optic disc are the site of large patches of white atrophy.)

Case 35.—Mrs Bawm, Drake Street, Nottingham, aged 66, suffering from cataract in the left eye; the lens in this eye, which a few months back was black, now presented a milky aspect, evidently undergoing, as in Mrs Barnes' case, morgagnian degeneration. Extraction by linear flap, under chloroform, on May 7th. As the cataract was extruded, two small pieces broke off, and floated into the anterior chamber, and before they could be removed, the patient began to strain and vomit, and so ruptured the hyaloid membrane, causing escape of vitreous humour; under these circumstances, I thought it safer not to attempt to extract them with the sucker, and they were consequently left for absorption. No bad symptoms followed, and the patient was discharged on the 7th day with excellent vision. I subsequently ascertained that she could thread a fine needle and read diamond type.

Case 36.—Mrs B. Burton Joyce, aged 68, suffering from blindness, from unsuccessful flap operation years ago on the right eye, and cataract, which had been attacked with a needle on the left. Extraction, left eye, without chloroform, linear flap, May 8th, the lens was considerably reduced by previous operations, and the nucleus was easily extruded through a small wound, sympathetic irritations, and the inflammation and oppression following the needle operation in an aged person had so far exhausted and injured the organ that perception of light was very imperfect, and I held out but little hopes of benefit from extraction. She recovered without a bad symptom; said the extraction was less painful than the needle operation had been, and was discharged on the 7th day with a good perception of large objects.

Case 37.—Mrs N., Stretton Street, aged 52, came under my care on March 5th, suffering from traumatic cataract in the right eye, complicated with posterior synechiæ, which prevented dilation of the pupil. Extraction, March 3d, by linear flap, under chloroform; the lens was readily extruded, but a portion of capsule adhered obstinately to the iris; I therefore lifted up the lower segment of the iris with capsule adhering, tore it from the ciliary border, and excised at each side, thus making an inferior as well as superior iridectomy.

The patient recovered without a bad symptom, and was discharged on the seventh day; she had then good perception of light and shadows, although vision was interfered with by a portion of clot and capsule, which remained after the excision of the iris. (N.B.—The pupil is still occluded by a piece of capsule, which she has hitherto declined to have removed.)

Case 38.—William Jackson, gardener, Basford, aged 76, came under my care, suffering from cataract fully formed in the left eye of three years' duration, and nearly complete opacity of the lens in the right; iridectomy in March; extraction, six weeks later, by linear flap, under chloroform. The eye was small and sunken, and brow very prominent, the conjunctiva tore very easily, and there was consequently considerable difficulty in fixing the eye; the lens was coaxed out, and some debris removed with the sucker, the cornea sank into a hollow, making the eye assume a bird's-nest form. Contrary to orders, the patient, who was very deaf and obstinate, took his dinner just before the operation, and vomited freely after; he had also a sharp attack of diarrhœa before and after getting to bed; no pain or other bad symptoms followed, and he now reads pearl type, writes fluently, and has excellent distant vision.

Case 39.—George Taylor, aged 56, Drake Street, came under my care, suffering from a cataract fully formed in left eye from a blow. Extraction by linear flap, March 26th, 1867; extensive adhesions render the operation more difficult than usual, but he recovered without a bad symptom, and was discharged on the 7th day; the cornea was perforated and otherwise injured at the time of the accident, and when I last saw the patient, the irritation from this cause prevented his being tested with glasses. He could distinguish large objects however, and there is every reason to believe that he will recover useful vision for all purposes. (Opthalmoscopic examination since has revealed considerable injury to the retina, and vision is not good enough for reading, although he can see large objects.)

Case 40.—George Knowles, Lambley, aged 48, consulted me, suffering from cataract in the right eye, the result of a blow, on April 2d. Extraction by linear flap, under chloroform; patient recovered, and had not a bad symptom up to sixth day, when he struck his eye under the influence of a dream, and I found him in the morning suffering considerable pain, and the anterior chamber suffused with blood. These symptoms passed off, and he was discharged on the twelfth day with pupil black and media clear; some blood remaining in lower portion of the chamber; good perception of objects. I have not since had an opportunity of testing vision with glasses.

Case 41.—James Silley, aged 5 months. Extraction, left eye, under chloroform, May 9th; as the lens had proved so tough and easily dislocated in the right eye, causing a slight iritic adhesion, I determined to excise a small piece of iris, and extract by linear flap; this was accordingly done, a small piece of capsule, which resisted all efforts at removal, being left. The little patient recovered without a bad symptom. As he would not submit to have the eye bound up, the pad was removed on the second day, and the eye exposed without ill effect.—This eye has since been severely injured by neglected inflammation occurring some months after recovery.

Case 42.—Samuel Roberts, aged 14, Vale of Belvoir, came under my care, suffering from traumatic cataract of the left eye, fully formed, with adherent pupil, the result of a blow with a stick, and subsequent inflammation. Extraction, under chloroform, October 11th, with linear flap and iridectomy; debris removed with suction curette. Discharged on the seventh day, with a small piece of capsule in pupillary area, but moderately good vision. On subsequent removal of the offending capsule, he read diamond type, and had excellent distant vision.

N.B.—The four cases of traumatic cataract would probably have done as well by other methods, but I wished to test the form of incision I have recommended as fully as possible. In Silley's case the lens was singularly hard and easily dislocated, so that in spite of the age of the patient I thought it a favourable case for extraction without a traction instrument.

Cases 43 and 44.—Maria Kirk, Southampton Court, Millstone Lane, Nottingham, an exceedingly feeble, pallid, marasmic individual, in her 68th year, came under my care on 16th May, suffering from blindness of seven years' duration, the result of fully-formed cataracts in both eyes. The skin was thin, flabby, and easily pinched into folds. She had been very badly fed and lodged for a long period, and was a martyr to asthma and chronic bronchitis; a persistent cough kept her awake at night, and necessitated her constantly carrying a spittoon. She also stated that she had not slept for an hour at a time for seven years, and that an ophthalmic surgeon, who had previously seen her, had declined to operate: altogether, the most unfavourable subject for operation I had ever seen. Extraction, left eye, 20th June, linear flap method under chloroform. The iris bled profusely on being incised, and I was obliged to suck out the blood from the chamber three times before the operation could be proceeded with; very firm iritic adhesions rendered it necessary to use a sharp hook to liberate the lens, after which it was extruded without difficulty. A small piece of capsule, which was too jelly-like to permit of removal, was left, and a little blood also. Extraction, same date, right eye: operation completed without misadventure, though at its close a fit of coughing caused the loss of a few drops of vitreus. In this eye also, the iris bled profusely, and I was obliged to empty the chamber with the sucker. The patient had very little pain on recovering from the chloroform narcosis, and the wounds were healed on the fourth day. Owing to her extremely feeble condition and the unfit state of her residence for the reception of an invalid, I kept her in the house for a fortnight, when she was discharged with brilliant eyes and good vision. This extraordinary patient, who used to be short-sighted, has since recovered most excellent vision with both eyes; can make out pearl type, though an imperfect scholar, and does fine sewing with facility; distant vision excellent without glasses. The ophthalmoscope revealed the existence of small myopic crescents.

Cases of Extraction by Suction since November 1865, 8 *in number.*

Cases 1 and 2.—Miss A. Burrowash, aged 20, applied to me on account of long-standing imperfect vision, the cause of which was not discovered until I saw her, when I found that she was suffering from incomplete opacities of both lenses. As the disease was progressing, and prevented her from reading or using her needle, I advised extraction, and accordingly broke up the lens on the left side with a fine needle and extracted, by suction, three weeks later on 7th April, at the same time breaking up the lens of the right eye, which I extracted by the same method, on the 21st of April. The extractions in both instances were performed under chloroform. In the right eye a small piece of lens matter floated to the bottom of the anterior chamber; I made several efforts to get it away with suction tube and canula forceps without success, and the irritation so occasioned caused a slight adhesion in that situation. The eyes were both opened on the 6th day, and atropine applied twice daily immediately after the operation. Result two months later,—reads diamond type and has excellent distant vision, clear pupils and bright eyes.

Cases 3 and 4.—Master C., Nottingham, aged 13, came under my care suffering from dim vision, which I found was owing to imperfectly-formed cataracts in both eyes. Capsule opened with a needle on 4th February, and lens extracted by suction from right eye on the 11th; discharged on seventh day. Three weeks later read diamond type with No. 2 biconvex, excellent distant vision with No. 4. Extraction by suction in the left eye, three weeks later. Discharged on the seventh day. Result,—reads diamond type and has excellent distant vision.

Cases 5 and 6.—Sailor Cammish, Scarboro', aged 14, a fine lad, born blind, with fully-formed cataracts in both eyes, came under my care, with bare perception of light, on 24th April. I broke up the lens in both eyes at once, and extracted by suction on the right, on 29th April; no misadventure; pupil bright and

clear. Two days later, I extracted on the left eye, by same method; no misadventure; pupil bright and clear. Result,—this lad, whose vision seems to improve, can distinguish large objects, such as a clock, a few yards distant, and can find a whistle, of which he is very fond, if thrown across the way. The optic nerves, like his brother's, are much whiter than natural; media quite transparent.

Case 7.—Henry Smeaton, Nottingham, aged 20, applied in November 1865 on account of cataract affecting the right eye, caused by a blow some weeks previously. I determined to try, in this case, if Sperino's method of tapping the chamber repeatedly would have any effect in diminishing the opacity. I therefore evacuated the aqueus every morning for forty days in succession, when, as the patient grew wearied and no benefit resulted, I incised the capsule, and on the 4th of January I extracted the lens by suction. Patient was well enough to go home on the eighth day. Eye looks healthy and pupil is clear. Has fair vision for large objects, but is amaurotic; vision has since failed.

Case 8.—William Harvey, aged 20, Grantham, came under my care on 1st January suffering from cataract in the right eye, complicated with syphilitic iritis and adhesions. Capsule lacerated on the 10th; lens extracted by suction on the 19th; patient made a good recovery, and was discharged on the seventh day with the pupil occluded by capsule, which he has not yet returned to have removed.

In these cases I always lacerate the anterior capsule to the extent of its anterior two thirds very freely, carefully avoiding the posterior capsule; wait from four days to three weeks, and then make an incision with a broad needle well within the margin of the cornea, and sloped so that it may be somewhat valvular in action. Injury to the iris is the great danger, and if that be avoided, Mr Teales' method of extraction by suction is, in my opinion, speedy, very simple, safe, and beautiful in its results.

Cases of Extraction by Scoop, 2 in number.

Case 1.—Henry Wells, York Street, a healthy lad, aged 14, blind in the right eye four years from traumatic cataract, which I extracted by dislocation into the anterior chamber, and removed with a scoop and forceps, making a linear incision in the cornea three lines in front of the sclerotic junction. Result,—pupil round and clear; media transparent; sight imperfect, owing, probably, to injury of the nerve at the time of his accident; can distinguish large objects and count figures. I have not had an opportunity of testing him with glasses.

Case 2.—James Silley, aged 5 months; fully-formed cataracts in both eyes. In lacerating the capsule in the right eye, I dislocated the lens, and therefore proceeded to extract it at once by linear incision, using the scoop to effect its removal; patient recovered without a bad symptom, and commenced to recognise objects for the first time a fortnight after the extraction.

To the 44 cases of linear flap extraction I have appended the 10 cases operated on by other methods, simply that this report might be made to include the whole of the cases of extraction for cataract which have come under my care from November 1865 to May 1867.

In only one of these 54 cases did the eyeball suppurate as a consequence of the extraction, the patient, in that instance, being a most unfavourable subject, aged 86 (Case 32). In tracing the subsequent history of the others since this paper was sent to press in June 1867, we find that Smith (Case 20), who recovered from the operation with a closed pupil, had a severe attack of iritis after

a subsequent attempt to open it, followed by atrophy of the globe; and that Mrs O. (Case 31), who recovered from the extraction and was able to read, had also a severe attack of irido choroiditis, followed by completely closed pupil, as a consequence of the subsequent too thorough (?) removal of a film of capsule. With regard to those patients who were evidently suffering from amaurosis as well as cataract, I thought it right to give them the chance of benefit from the operation as they had perception of light, and it was impossible to say how much or how little they might be improved by a successful extraction. The optical results in the sum-total of cases is marred by such amaurotic complications, though, I think, this is of little consequence in testing any peculiar method of operation so long as we get the pupil clear and are able to examine the fundus oculi; indeed the test is probably rendered somewhat more severe, as such diseased globes are more likely to resent operative interference than comparatively healthy organs.

I mentioned at the commencement of this paper that it was easy to make the incision with Dr Bader's smallest-sized iridectomy knife, and since the above was written, I have frequently used Mr Critchett's iridesis knife for the same purpose. This should be entered at the left-hand extremity of the transverse centre of the flap, and carried from left to right; a small piece of iris may be withdrawn and excised, the capsule lacerated, and the incision enlarged to the requisite extent at either extremity by means of a similar knife with a blunt point, which I have had made for the purpose by Messrs Weiss & Son.

Generally speaking, a series of successful cases, as has been remarked by Von Gräfe, are apt to be followed by others more or less complicated with disastrous results; I feel it therefore my duty to close this paper with a brief *resumé* of the results obtained since the above were recorded.

I have never refused a case, and find I have since operated upon 65 cases of cataract, two by solution in children, and 15 by suction, which were and are doing well; eight by Pagenstecher's method; the remaining 40 by linear flap; of these 44 recovered without bad symptoms. Many of these persons were verging on 80; three were over 80; and one was 88 years of age; one had been quite blind five years, and another seven; both these recovered excellent vision, as did the remainder, with two or three exceptions, where the results are marred by amaurotic complications or small films of remaining capsule. In one the pupil is partially closed by exudation, which may disappear, and in two instances the eyeball suppurated; in both these patients, aged feeble women, marasmus was extreme; one had just been discharged after a two months' stay in an ophthalmic ward as unfit for operation, and the other was in a very similar condition. The operation in both cases was completed without the slightest misadventure, and promised, *à priori*, an excellent result; there was not, however, in either case, sufficient *vis vitæ* for the wound

to heal, and in spite of stimulants, aromatic poultices, and compress bandages, the cornea perished without pain simply from inanition, and general panophthalmitis followed some days after the operation.

The results in the remaining two cases operated on by Pagenstecher's method has been marred by the occurrence of irido choroiditis in one case and the formation of vitreous opacities in another, apparently the result of strain on the ciliary region caused by the removal of lens and capsule entire.

I hope to give these cases in detail at some future period.

24 Mansfield Road, Nottingham.

PRINTED BY OLIVER AND BOYD, EDINBURGH.