pulses to a perverted nutrition, resulting in the retention within the blood of the excrementitious products, which we may call "the rheumatic poison". Attention to the clothing and proper feeding of infants and children constitutes, in my mind, therefore, the treatment of the first importance as regards endocarditis. There is no need now-a-days to insist on the importance of preventive treatment as regards the zymotic diseases; this is well recognised. Is it not quite as important as regards the subtle disease we are now considering? I would, whilst recognising the difficulties of such proceeding, strongly recommend the periodic medical examination of children, even though they present no obvious signs of disease.

Of no less importance is the treatment in regard to the zymotic diseases, which are correlated with the endocarditis, viz., scarlatina and measles. The subject of an attack of scarlatina should be watched with great care for long periods after convalescence. Moreover, the slightest sign of throat-ailment, especially with children, should be looked upon with suspicion. I have no doubt whatever that, in a large number of instances, ulcerative tonsillitis of zymotic type occurs in children unnoticed and unknown, and that in many such a renal complication is instituted which is also neglected. The rise of endocarditis in such cases is, as I have said, not during the period of fever. I do not recognise the influence of morbid germs in directly occasioning the inflammatory change in the valves, but subsequently, it may be after long periods. The teaching I would enforce, therefore, is that the subject of scarlatina, or of the allied forms of throat-affection, should be watched, protected, dieted, and treated for periods much longer than is now usual. And as regards measles, there is unfortunately a widely spread tendency to regard measles as a very slight ailment, that requires little or no treatment. Experience tells, however, that it is often not only the immediate precursor of bronchopneumonia frequently and heart disease occasionally, but that it effects upon the powers of nutrition a deleterious change which lasts, as in the case of scarlatina, for long periods. The subsequent treatment, therefore, of the subjects of measles, should, in my opinion, be much more protracted than it is at present.

Such is an outline of what I consider the common-sense treatment of the first causes of endocarditis. During its rise and progress in an attack of rheumatism, I prefer the treatment by salicin, or the salicylates, in sufficient doses (usually 20 grains every four hours till the pain and pyrexia have subsided, and afterwards the same dose thrice or twice a day). From the evidence of Dr. Isambard Owen, there is a good case in favour of combining with this the administration of full doses of alkalis.* Vesication, by application of liquor vesicatorius in the left axilla, I think also of service.

It now only remains for me to allude to the clinical significance of ulcerative endocarditis with regard to indications for treatment. It happens sometimes that this affection arises and runs its course, with little or no evidence that the endocardium is impaired. (Such cases often present a strong resemblance to typhoid fever.) Here treatment is of no avail; the disease is uniformly fatal. By far the most frequently, the disease is ingrafted, as it were, on chronic disease of the valves. It appears to me that such cases can be divided into two classes: the infective and the non-infective. In the infective cases, there are extraordinary disturbances of temperature, multiple emboli, and septicæmic signs, or even abscesses. It is in such that micrococci are discovered. Their origin I believe to be due to specific organisms—derived from some subtle zymotic influence, or from absorption of virus, as in the puerperal cases. It is not that the micrococci induce the endocarditis, but they complicate the already existent endocarditis by necrosis of the diseased tissue.

In other cases, though nearly all are characterised by embolism, the proof of infection and, as I think, the probabilities thereof are wanting. In a case lately under my care in the London Hospital, there was no marked pyrexia whatever, the temperature never exceeding 101° Fahr., and, for the most part, keeping close to the normal. I consider it most probable that, in some such cases, the ulceration is induced by mechanical causes. Drs. Wilks and Moxon have pointed out that a great mass of vegetation may cause ulceration of the heart-wall by direct pressure, or a fibrous clot swinging in the blood-current, coming sharply into contact with the muscle, may, by friction start an ulcer.† In like manner, I think it very probable that a weighty vegetation, or mass of vegetations, upon a valve may, by agitation in the blood-current, so disturb the nutrition of the endocardium which constitutes its base, as to start the process of necrosis. The lessons taught by a study of the cases are these. 1. More than ordinary care should be exercised to keep the

subjects of valvular disease of the heart from possible sources of infection. 2. Any threatening of endocarditis should be treated by the most perfect physiological rest attainable. 3. Nutrition should be sustained to the highest degree practicable.

ON THE EXTRACTION OF SENILE CATARACT IN ITS CAPSULE.*

By EDWYN ANDREW, M.D., M.S., F.R.C.S. Eng.,
Surgeon to the Shropshire Eye, Ear and Throat Hospital.

WHILST I feel highly honoured by having been asked to open a discussion on the extraction of senile cataract in its capsule, an operation in which I have taken considerable interest for some years, and relating to which I have performed a number of experiments, which, I trust, may help to remove certain difficulties in its performance, I cannot but fear the subject may lack interest from not having been placed in more able hands.

Out of the numerous operations employed, at the present time, for the removal of senile cataract, no one has reached that state of perfection which can claim for its use universal application, or the general approval of ophthalmic surgeons. A perfect extractive operation, I consider, should effect the following results. It should make a moderate opening in the cornea, so as to lessen as little as possible the normal tension; it should remove the cataract at one sitting, and prevent the possibility of a secondary cataract and the necessity of a second operation; it should preserve the iris intact without irritating its structure, thereby avoiding inflammation, exudation of lymph, closed pupils, and other evils, or prolapsus with its great disadvantages; it should leave a round central contractile pupil; it should restore and retain the full visual power of the retina; it should tend to rapid healing without discomfort; and it should require little or no after-treatment except short rest.

Although no operation can yet attain to this high standard, yet, believing as I do, that the chief cause of failure in cataract-extraction is the irritation set up by cortico-capsular matter left behind, I think the nearest approach will be the successful performance of the operation now under discussion; and whilst acknowledging that failures during the steps of this method of extraction are of serious import and may lead to the destruction of the whole eyeball, still it is doubtful whether such a disaster is of more frequent occurrence than by any other mode of operation.

Although a great number of surgeons, Beer, Richter, Sperino, etc., have practised this operation, I shall only refer to two, who after some years' experience, still continue to uphold and select this procedure in the majority of their cases. I refer to Pagenstecher and Macnamara.

Pagenstecher, after operating in several hundred cases by this method, states that he obtained greater acuteness of vision than by any other operation, whilst he lost no more eyes than by ordinary linear extraction.

He formerly operated by a large flap downward, and chiefly in the sclerotic, with a large iridectomy under chloroform; but he has recently made a linear incision upwards with an iridectomy without an anæsthetic, generally removing the lens with a scoop and with anti-septic precautions, which, he says, renders the loss of vitreous humour, when it occurs, of little importance.

Macnamara reports that he has obtained far better vision and far greater success by this than any other means. He uses anæsthetics and operates, as is well known, by a large temporal flap, and the removal of the lens by a scoop; performing iridectomy should the dilatibility of the pupil be slight, or should the capsule be ruptured in the proceeding.

Whilst such good observers and operators as the above have championed thus strongly this operation, it has been no less strongly condemned by one of no mean reputation, De Wecker, who says, in his lecture, "This operation has been as many times taken up and as many times abandoned. It is employed at present by no one except Pagenstecher, who in his operations violates all the rules which have been laid down for his guidance in extraction operations; to whom I will mete out this praise, that by his sincerity and truthfulness, he has certainly warned off all inexperienced persons who might purpose to adopt such a method of extracting a cataract."

* *Lancet*, January 28th, 1882.

† *Pathological Anatomy*. 2nd Edition. Page 120.

* Introduction to a discussion in the Section of Ophthalmology at the Annual Meeting of the British Medical Association in Worcester, August, 1882.

This is strong language for one so gifted in eye-surgery, for one who, after himself practising the operation, must have given it up owing to the danger accompanying it; but it must not be forgotten that in every surgical department some of the most dangerous operations of the past, denounced then in no measured terms, have become the most successful of the present day.

Of the plans proposed hitherto for removing the lens in its capsule, I consider Macnamara's the best, safest, and easiest; and, while I thank him greatly for the advantages which it has conferred on myself and patients, and while in his experienced hands probably few failures occur, still I hope he will excuse my saying that his operation (as well as the others introduced for the purpose) has defects, which, although they may be greatly lessened by the skill of the originator, are sufficiently serious to prevent either his or the other methods from becoming the operation of the many, unless they be materially modified.

These defects are the tendency to cause loss of vitreous humour and the evils thereof; the large corneal opening required for the easy escape of the lens, and when the scoop is used, which is the rule, too frequently rupture of the capsule and bruising of the iris and vitreous body. Loss of vitreous humour certainly occurs in the larger number of these operations, but the amount depends greatly on the skill of the operator and the instruments employed.

When the vitreous humour is of a good consistency, as we find in the eye of the lower animals, there is some difficulty in pressing it through even a large corneal opening. Again, in children, as is well known, the whole front of the eyeball may be abscised with little or no loss, but as age advances it certainly becomes more and more fluid, and with the formation of cataract this fluidity seems to increase at a greater rate, especially behind the hyaloid fossa.

Putting aside great tension, when loss of vitreous humour may occur in any operation requiring a corneal opening, and may appear before the escape of the lens, with the lens, or after its expulsion, there is little tendency to escape of vitreous substance, even if fluid, except from diminishing the internal capacity of the ball by engorgement of the choroidal vessels, or from external pressure due to spasmodic action of the muscles, or, far too frequently, from the instruments made use of, as the sclerotic is not contractile, and possesses slight, if any, elasticity.

Although every endeavour should be made to prevent escape of vitreous, I consider the injurious effects of a moderate loss have been much exaggerated by the opponents of the operation. Most eye surgeons of the present day, I think, will allow that a small loss of vitreous humour is of no importance. Indeed, some operators consider it an advantage; and Professor Hasner deliberately punctures the centre of the posterior capsule and hyaloid fossa, to allow vitreous substance to project through, as a valuable addition to extraction, and giving better results. When again we refer to the "reports" of the old flap-operators on which reliance ought to be placed, we find that with the extra disadvantage of capsule and cortical masses left behind, they frequently obtained excellent vision, even after considerable loss—one-fourth, Wharton Jones; one-half, Lawrence; two-thirds, Middlemore.

It appears further that the bad effects of loss of vitreous humour depend not so much on the amount of that loss, as on the condition of the other structures of the eye. When the choroidal vessels are weak, when the iris and vitreous body have been previously diseased, or when either or both of them have been bruised by the instruments, or the latter of them continues to be irritated by the embedding of cortical capsular matter in its substance, the ill effects become much more grave. Again, the state of the coats of the eyeball is of great importance; when these are soft and accommodating, a large quantity may be lost without greater injury than temporary hyalitis or persistent muscae; but when they are rigid and unyielding a small quantity, by lessening the normal tension, rendering the further steps of the operation more difficult, and encouraging the admission of air may produce the direst evil; such as immediate rupture of choroidal vessels or suppurative of the globe, or later, low inflammation destroying the vitreous body as a clear medium, or producing detachment of the retina.

The large corneal opening is almost essential, for the lens in its capsule, with the addition of the scoop, requires considerable room for its exit; and the avoidance of any bruising of the other structures of the eye in the passage of the lens, is of far more importance than the extent of the corneal opening. Pagenstecher lessens the necessity of such a large corneal section by making a large iridectomy; but, by thus mutilating the iris, he destroys the conservative principle of the operation, which has been its chief recommendation to many surgeons. Again, by making the section up-

wards, he has considerably increased the difficulty of using the scoop, and increased the tendency to loss of vitreous humour.

When the scoop is used, the temporal section of Macnamara seems by far the best, from the ease with which the instrument can be used in extracting the lens, and the less liability to loss of vitreous.

To Macnamara's broad triangular knife, for making the section, I cannot give equal praise, as it is rarely so finely set as to cut equally well at the point and the base; and, therefore, with a tough cornea or a soft eyeball, the point may reach the opposite margin before a sufficiently wide opening is made, the coats of the eye being pressed in before it, while, from its width, should the incision be begun in a faulty manner, it cannot be remedied at a later stage.

A sufficiently large section having been made at any part of the cornea which the operator may choose, an endeavour is generally first made to expel the lens by gentle pressure, and thus avoid the use of any instrument. Failing in this, scoops of different forms are employed; but the preference, I think, should be given to Taylor's rather than Pagenstecher's or Macnamara's, as it takes up the least room where space is most desirable; but as, in some instances, the cataract so sinks into its hollow, that the instrument guillotines a portion of the posterior capsule, I have made a modification, by adding two fine bars, which, in my hands, have proved an advantage.

When no iris is removed, I believe all operators pursue the same method. With the scoop, the margin of the pupil is drawn back to the edge of the lens nearest the corneal opening, when it is thrust through the suspensory ligament, along the posterior surface of the posterior capsule, until it reaches the ligament on the opposite side, through which again it forces its way. The end of the scoop is now gently raised, making the sclerotic edge of the wound a fulcrum, so as to press the lens gently against the cornea, when it is slowly extracted in its capsule. The lid is shut and rubbed to produce a round pupil; the eye is bound up, and, if there be no complication, the operation is over. No further treatment is required, and an excellent result, if not the full visual power of the retina, may be expected.

Referring again to the operations in use, it seems that pressure and bruising are the chief defects. Pressure is kept up throughout by the speculum; and although Noyes's of New York seems the least injurious, all produce indirect pressure on the eyeball, which may be easily proved by puncturing a diseased eyeball about to be extirpated, when vitreous humour generally escapes, but ceases on removal of the speculum. Again, in the eyes of persons immediately after death, some fluid vitreous humour may be induced to escape through an opening by introducing a speculum; at a later date, the mere collapse of the ball is sufficient.

Considerable bruising must take place at that part of the operation when the scoop is used to extract the lens in its capsule; for, in spite of every precaution, the iris is pressed on when drawn back by the scoop; and, when sensitive (for the tolerance of injury varies much in individuals), it must be slightly bruised; and although primary iritis is rarely set up, still, dislocation of the pupil on the side of the incision is much more frequent than operators care to confess. Again, by forcing the scoop through the suspensory ligament, especially in the upper section, it must be pushed more or less into the vitreous body; and in any section, in its passage behind the lens, it must tear or bruise the substance of this structure, and a second time force its way through the ligament, thus doing violence throughout.

In this proceeding, the whole of the ligament is frequently not torn, and, when tough, the portion left by its resistance has caused rupture of the capsule during its removal, thus destroying the intrinsic value of the operation.

Without dwelling further on the minor points, I will now lay before you the various means which I have used at the Shrewsbury Eye Hospital, with the design of rendering the operation more easy of performance, and more certain of being successful.

Previous Examination.—The eye is tested, some days before operating, with regard to its sensitiveness to atropine and eserine, so as to ascertain the weakest solution of atropine which will produce the greatest dilatation of the pupil; and, secondly, the percentage of eserine which will overcome, if possible, that dilatation; as we thus learn the dilatibility of the pupil, whether the lens will pass through it without bruising, whether an iridectomy would be requisite, what power we possess to overcome a tendency to prolapse, or, what is more frequent, dislocation of the pupil. The lens is examined with special reference to size of corneal opening required for its easy delivery, whether large or small, flat or arched,

whether containing a large or small nucleus, surrounded by much or little, soft or semi-hard cortical matter, *e.g.*, a milky white lens with a small nucleus, surrounded by fluid cortical matter, will require a much smaller corneal opening than the opposite condition.

The state of tension of eyeball and of the vessels in other parts of the body with regard to elasticity or hardness, is carefully studied; for, if ossified vessels exist with increased tension, this operation is not advisable, lest the large corneal opening required, and removal of the posterior part of the capsule should induce rupture of the choroidal vessels, frequently weak under such conditions.

The size of the anterior chamber, the diseased or healthy condition of the other structures of the eye, the congestion or otherwise of the conjunctival vessels, the patency or obstruction of the lachrymal apparatus—all are noticed with regard to the future steps of the operation.

Previous Preparation.—The canaliculus is slit up if there be any lachrymal obstruction; the eyes are banded for some days, so that the patient may become accustomed to the feeling; the morning and evening temperatures are noted; the night before operation, atropine of sufficient strength is instilled to produce moderate dilatation next day. On the morning of the day, a very light breakfast is given, such as may be digested before the operation at midday.

Anæsthetics, generally ether, are almost always employed; and, should a large corneal opening be made, they are most desirable, if not essential. Their effect should be complete; there should be no reflex action on the eye being touched; if difficult to be accomplished, they should be aided by a hypodermic injection. In those rare cases, as in intemperate patients, where still ineffective, and especially when ether being used is accompanied by blueness of face and congestion of the superficial veins, and probably engorgement of the choroidal vessels, chloroform should take the place of ether, or the operation should be modified, or, better still, another chosen.

To entirely prevent the action of the muscles is to remove one great cause of the loss of vitreous. As a strenuous advocate of anæsthetics for many years, my experience is, that loss of appetite in old people has been their chief evil, sickness being of little importance if the stomach has been previously kept empty, and if moderate pressure be kept up on the eye by a bandage; whilst their advantages in this operation are so great compared with their disadvantages, that their use is strongly urged.

Antiseptics are not employed. Many operators, especially Pagensteher, say they render the danger of an eye operation, especially this one, very much less, and in particular, remedy the disaster of a large loss of vitreous humour. On the other hand, De Wecker finds the results are on better with than without. In my own practice, perhaps from imperfect application, or a difficulty in carrying it out, they have been found objectionable rather than otherwise. For years, I have carried out a plan which I can recommend to all, *viz.*, to have a small tin of water always kept boiling by a gas-jet, into which every instrument is dipped before use; this, if it do not destroy every germ, must at least, I should think, check their ardour, and has this advantage, if no other, of keeping my instruments in beautiful condition.

Specula.—None are used, owing to the indirect pressure on the eyeball mentioned above. In lieu of these, at first the upper lid was raised by a retractor held by an assistant, but it was found to be in the way, and easily slipped; next, a *serre-fine*, to which a thread was attached to seize the skin of the lid, but it too often tore the skin away, and became detached; but now, and for a considerable time past, a carbolic ligature has been introduced through the skin of the upper lid, which, without inflicting any appreciable injury, forms a most perfect speculum (if I may so call it) for the use either of the operator or of his assistant; it is entirely out of the way, it causes no pressure, and it allows the eye to be instantly opened or shut as frequently as may be desired. The same may be used on both lids, but for the lower it is rarely required.

Section of Cornea.—This has commonly been made in or near the corneo-sclerotic junction, the extent of the incision generally varying from five-twelfths to one-third of the circumference of the cornea, according to the condition and size of the lens; when hard, a large corneal opening being required, and *vice versa*. If in doubt, the larger section has been always made. All these corneal sections have been made with a modified Gräfe's or Beer's knife, even on the temporal side, in preference to Macnamara's triangular knife; this being accomplished by using a double forceps rotating the ball, and thus allowing the knife to be used. When, however, with a widely dilated pupil, the temporal section has been determined on, the triangular knife has been used so as to prevent the almost certain injury by the ordinary knife. The upper section is generally selected

if the eyeball be in good condition, if there be no intention of using the scoop, or if an iridectomy is to be performed.

The lower section is made, if the eyeball be diseased, especially if the tension be lowered; the temporal or the outer and lower section, if the scoop be used, as in either of these positions the instrument can be most easily passed under the lens without rupturing the vitreous body to any great extent.

The corneal section of Liebreich and Lebrun also readily allows the removal of the lens in its capsule, with probably less tendency to escape of vitreous humour, but with the disadvantage common to all such openings, the great liability to anterior synæchia. A nasal section has been made with a bent triangular knife, but it possesses no advantages.

Iridectomy, which diminishes the conservative aim of this operation, is only practised when there is considerable tension, posterior synæchia, a very shallow anterior chamber, or when the pupil is not dilatable by atropine, or only slightly so. In the first four of these conditions, a moderate or a large portion of the iris is removed. When slightly dilatable, a minute portion is taken away, or a simple incision is made through the iris by a capsular or other scissors. Under these circumstances, iridectomy is generally performed at the time of extraction; but when the eye is much diseased, it should be done a few weeks previously.

Extraction.—To render the use of the scoop the exception rather than the rule, the suspensory ligament of the lens has been detached by a new method. With a piece of stiff wire, about one inch in length, mounted on a handle, having the point smooth and rounded, and a line to half a line of its extremity bent at a right angle, an instrument has been formed, to be used in the following manner, either before or after the section. If before, a minute opening is made in the cornea close to its margin by a small bent broad needle: the instrument is passed into the anterior chamber sideways over the lens and under the iris until it reaches its distal margin; the point is now turned downwards, the ligament pierced with ease, and, following the edge of the lens as a guide, it may be torn to any extent the operator may desire by rotating the ball. If, after the section, the instrument is introduced through any part of the opening found most convenient, and whichever course is followed, being under the iris, that structure is scarcely touched. The endeavour is to tear the ligament with the slightest injury to the vitreous body; and, to accomplish this in the manner above mentioned, the bent portion is made of different lengths, in order to adapt itself to an arched or a flat cataract. The wire is also fixed in a light handle, such as cedar-wood, so that the slightest resistance at the point is communicated to the fingers. The lens being thus quite freed from its attachments—for the slight adhesion to the hyaloid fossa is of no importance—and the patient perfectly quiescent, the lens, by slight pressure with a tortoiseshell curette, may be generally eased through the corneal opening without the aid of any extracting instrument.

Pressure failing, should the vitreous body be of moderate consistence, as shown by its projecting with a glass bead-like appearance, instead of the ordinary scoop, another has been used which I had made some years ago, with the shaft bent backwards near the end, so that the loop may be passed in front of the lens to catch it at its distal margin, and to draw it forwards, raising the cornea at the same time without the scoop touching either iris or vitreous body. Should the vitreous humour be very fluid, the ordinary scoop passed under would be preferable. In other cases, where moderate pressure causes the lens to project without escaping, elongated scoops formed like the blades of a diminutive midwifery forceps, of different curves, have been applied to the edges of the lens to assist its exit, with great advantage.

Again, in order to lessen, especially in diseased eyes, the evil of a large corneal opening, and the diminution of the natural internal support of the ball, modifications of this operation have been and are being tried, but not sufficiently often to give the results that weight required in an assembly like this; I shall therefore content myself by mentioning them.

As the lens becomes slightly wider, when pressed between the scoop and cornea on its passage outwards, thereby necessitating a rather wider corneal opening, and as pressure on the edges of the lens can so compress the cortical matter, without rupturing the capsule, as to render the lens oval instead of round, so as to be capable of passing through a smaller corneal opening, straight and curved forceps with minute scoops at their ends have been constructed to effect this purpose.

The suspensory ligament has been detached, and the lens left loose in the eye for several weeks before extraction. As the eye has been found to suffer no appreciable injury from the freed lens within it, the detaching instrument has been used diagnostically to

indicate the best means of removing the separated lens, the size of the corneal opening required, and the advisability or not of an iridectomy; and again, in exceptional cases, the desirability of depressing, as has been explained more fully in my paper on Dislocation of the Lens. (BRITISH MEDICAL JOURNAL, December 30th, 1882.) A small corneal section has been made, the suspensory ligament has been detached, except adjacent to the section; a portion of iris has been removed, the edge of the capsule has been divided after the manner of Knapp, the cortical matter and nucleus have been pressed or scooped out, and the empty capsule previously detached, in great part has been removed at the same time or at a later date.

The lens, with its capsule entire, being removed by one or other of these methods, the upper lid is slightly rubbed and then raised, when, if the pupil be round, central, and of normal size, no application is used; if dilated, eserine is applied; and should the pupil show irregularity, eserine is continued for several days; a strip of isinglass plaster is first put over the lid, followed by a piece of lint dipped in carbolic glycerine, and over that a pad of cotton-wool; the whole is kept in position by as much pressure as is agreeable to the patient by a carbolic gauze bandage. If there be pain, which is rare, it occurs generally the first night, when relief is usually obtained by applying a leech, followed by an opiate pill or a hypodermic injection. The patient progressing, no treatment is required except the daily reapplication of the dressings for his comfort; he is allowed to get up the third day, and generally commences using his eye about the tenth or twelfth. If the various steps of the operation have been performed satisfactorily, a successful result is almost certain, provided the retina retains sufficient visual power; but, as in other operations, difficulties arise, which at times, with every care, mar these results.

The anæsthetic may act imperfectly, causing struggling or muscular spasm; or, when an anæsthetic is not used, the patient may have too little self-control, causing unsteadiness; in either case inducing too great loss of vitreous humour, or bruising the structures from the consequent difficulty of using the instruments with the required delicacy. In such circumstances, dislocation of the pupil is the least evil; as, although it disfigures the eye, it still allows of good vision. Pushing forward of the whole iris against the cornea is more serious, as it shows disorganisation of the vitreous structure, necessarily with diminution of sight, and often ending in total blindness. Prolapse of the iris is rare, primary iritis still more rare; but, at a later date, when much vitreous humour has been lost, permanent hyalitis, with secondary iritis, too often destroys vision by exudation of lymph. Suppuration I have never seen, unless, with other injuries to the eye, cortical capsular matter have been left behind.

Putting aside senile cataracts of old standing, with increased tension and diminished anterior chamber, this operation is suitable to almost all other cases of senile cataract, especially when joined with synechia, myopia, irido-choroiditis, and other conditions, where it is particularly desirable to avoid all irritation after extraction. I look forward to the time when, rendered safer by experience, it will be employed to remove cataract at a much earlier date, before the vitreous body and other structures of the eye have been weakened; so that, instead of allowing a patient to grope about waiting for his cataract to mature, we shall feel justified in advising its removal as soon as it becomes a decided inconvenience.

In concluding these remarks, I claim for my operation that it lessens external pressure, and prevents internal bruising; that it requires no specula, but provides an easy and safe mode of opening the lids; that it does not mutilate the iris; that the use of the scoop is the exception; that it seldom, if ever, ruptures the capsule, the preservation of which is the chief safeguard in all such operations; and that this mode of operating gives visual results equal, if not superior, to any other mode of extraction, with the impossibility of a secondary cataract.

In a future paper, I hope to give full statistics, with an analysis of the cases.*

* The various instruments mentioned were exhibited at the meeting.

SCARLET FEVER AT ACCRINGTON.—The borough of Accrington has just got rid of one of the most serious epidemics of scarlatina that has occurred in England for some years, and frequent reference to this outbreak has been made in our columns. The day-schools have been closed for over three months, the loss in school-pence alone being £1,000 in the same period. About one hundred and twenty children have died from the fever. The schools, including the Sunday-schools, have been reopened.

ON EXTRACTION OF CATARACT BY A SHALLOW LOWER FLAP; WITH A RECORD AND ANALYSIS OF 121 OPERATIONS.*

By SIMEON SNELL, L.R.C.P., M.R.C.S.,

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AN apology is seldom necessary for recording a series of cataract-extractions, and I trust none will be needed for my bringing before you the mode of operation performed by me, and the results achieved in 121 cases. The days of old, when every one followed with military precision the method of extracting by the flap-operation, have long since vanished, and have given place to a period in which each one does that which seemeth right in his own eyes. The Graſian operation has been variously and ingeniously modified by different ophthalmologists, and it has been alleged that "nothing now remains of the original operation but the knife." Be this as it may, however, the introduction of this instrument, and its substitution for the older knives, has rendered a valuable service to the extraction of cataract.

Before proceeding to describe the operation performed in these cases, I would say that only in three instances (one further on excluded from consideration) has an anæsthetic been administered. In each of these, ether was given, though in one, owing to the excitement produced, chloroform was substituted. I have always avoided the use of anæsthetics, because the comparative brevity of the operation not only generally renders their employment unnecessary; but I fancy the dangers resulting from the movements of the patient less, instead of greater, than those from the sickness and retching after the administration of chloroform or ether, to say nothing of the general upsetting which, I think, must sometimes exert a deleterious influence. Passing reference may be made to the recently recorded statistics of Hasket Derby, both with and without anæsthesia, and to the superior results achieved under the latter.

As to the operation, no speculum or fixation-forceps is employed. The eyeball is steadied only by the operator's fingers in the following manner. The patient, lying flat on his back, either on the operating table or on a bed, the surgeon stands behind, and, with the fore and middle fingers of the left or right hand, according as it is the right or the left eye which is to be operated upon, gently draws upwards the upper lid. This being done, the middle finger is allowed to descend somewhat, until by gentle pressure on the inner side of the sclerotic, it steadies the globe. At the same time, an assistant draws away the lower lid, and fixes it against the malar bone. An ordinary Gräfe's knife is now used; sometimes, however, I employ one narrower and shorter, the operator using the left hand for the left eye, and the right for the right eye if he be ambidextrous, and the puncture made in the sclero-corneal junction just below the centre of the pupil. The knife is entered flat, or nearly so, and the counter-puncture having been completed, it is carried downwards for a little distance, and then the edge of the knife is turned directly forwards, and the section finished. The summit of the flap will thus lie about the middle of, or a trifle below, the centre of the space between the pupillary edge and the lower corneal border. The capsule is freely torn with a bent cystotome, and the lids freed from all moisture by portions of lint. The lens now finds a ready exit by means of pressure on the upper lid by the fingers, and by the same plan on the lower, but, generally speaking, with the vulcanite curette. Any remaining cortex is got rid of by gently rubbing the lid over the cornea, and what is well known as the "lid manoeuvre," and the operation now finished, over each eye is placed a fold of lint, that over the one which has undergone extraction is moistened in cold water, and desired to be kept so for the next few days, and then a thin bandage† completes the dressing. The eye is, usually speaking, left undisturbed until the fourth day. At this time, a peep is made to see that everything is favourable; and, if so, the patient is allowed to sit up, for a little, on the fifth or sixth day.

With respect to the performance of iridectomy, it will be presently shown that, in less than half the cases, a portion of iris was removed. The rule I follow is simply this. Should the iris show signs of clinging about the wound after the escape of the lens, and not readily receding, a small piece is cut off; or, indeed, sometimes I excise a por-

* Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association in Worcester, August 1882.

† The bandage here referred to is the one first suggested, I believe, by the late Mr. Dunnage. It is of open texture, and at each temple two tapes are joined to its extremities at each angle; these pass over the ears, and, continued on each side as one tape, are carried round the head and tied in front.