and pelvic varieties, if there is a choice, I should prefer an incision as nearly as possible like that for ligature of the external iliac artery.

TEN YEARS' EXPERIENCE OF CATARACT OPERATIONS.¹

By FREELAND FERGUS, M.D., F.F.P.S. GLASG.,
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It is now almost exactly ten years since I cut my first cataract. Our methods have during these few years changed enormously, both as regards the treatment of senile and soft cataract. The results are, I think, much better now than they formerly were, and this I believe to be wholly due to the greater aseptic precautions which are now observed, to some extent at least, by all ophthalmic surgeons. We can remember a time, and that not so long ago, when the total failures from operation was very heavy. The chief causes of disaster were suppurative keratitis, cyclitis, or irido-choroiditis, ending in atrophy of the eyeball and severe plastic iritis. When an event of that kind occurred it was the custom to attribute it to some special condition either in the eye itself or in the patient. Thus I have known a failure from suppuration attributed to the fact that the patient had albuminuria; a failure from severe choroiditis, or rather cyclitis, to the fact that the patient had a fluid vitreous—and so on.

That such accidents will happen to the end of time, I think, is probable; but that they should happen in any large proportion of cases where reasonable care is taken is, I think, impossible. To my mind these occurrences do not depend on any such circumstances as a fluid vitreous, much less on the size and position of the wound, nor on the kind of bandage that is used, although I have heard all these conditions blamed for suppurative keratitis. These accidents I believe to be due to nothing else than to something in the environment of the patient, and there can be little doubt that they are preventable.

My first operation was performed on a most unsuitable patient, a woman somewhat advanced in years, who suffered from melancholia in one of its milder forms. To the best of my ability I cleansed both myself and my instruments and the patient's eye, using for the instruments carbolic acid, and for the patient boracic acid. There was no cocaine then, but the patient did not require any anæsthetic, for she was perfectly steady. Even at that time I had, from seeing the work of many Continental surgeons, determined to do without preliminary iridectomy, a proceeding which, so far as this town was concerned, was the universal rule, but which I found to be almost unknown in the hands of such operators as Meyer and Snellen. I was all the more anxious to perform only one operation on the patient on account of her mental condition. I am almost ashamed now to say that I made a downward section—that is, one in the lower portion of the cornea; that, also, was the prevailing operation here at that time, and seemed to me, even in my student days, to be a much inferior operation to the upward section, as performed by almost all surgeons. By the downward section an unsightly coloboma is formed which cannot give the same good optical result as a coloboma completely hidden by the superior eyelid. So far as I am aware, however, that was the only case in which I made a downward incision in a private patient. The patient did well, and my result was Snellen's $\frac{3}{8}$ and J. 1. I wish that all my results were as good as that, although I think a good number of them are. I have here mentioned two details in which my operation, as now performed, differs from my earlier ones—I rarely make a downward section, and I rarely make a preliminary iridectomy.

OBJECTIONS TO THE DOWNWARD SECTION.

There are a very few cases in which I think a downward section is the only possible operation, but I am distinctly of opinion that under ordinary circumstances it is unjustifiable. Unquestionably we all admit that if there is any corneal

opacity at the upper portion of the cornea, covering to a greater or less extent the pupil, that it is the only available operation. Again, it may be advisable when the patient has very sunken eyes and very low eyebrows, although even in these circumstances I should not use it. It has been advanced on behalf of the downward incision that the operation may easily be done without a lid speculum. While not denying that this is so, yet I should never think of operating without one, for with a good Carter's speculum inserted and carefully manipulated by a good assistant, it is impossible for the patient to strain. Again, the allegation that the removal of a speculum when there is escaping vitreous is difficult, and promotes the escape of a greater quantity than would otherwise escape, is not true; or, if true in some cases, it is an idiosyncrasy of the surgeon. If properly used, a speculum prevents spasm of the patient's eyelids, and prevents the expulsion of vitreous.

That a downward section is not so good an operation as the other any one may prove to himself by simply looking at the pupils of his next neighbour when fixing a distant point. On doing so it will be observed that the eyelid in most persons covers, to a great extent, an upward coloboma, thereby not only hiding a thing which is unsightly, but also, by taking part in the formation of the pupil, helping optically by the completion of the pupillary diaphragm. As far as the safety of the eye is concerned, there is not a whit of difference between the two incisions.

OBJECTIONS TO PRELIMINARY IRIDECTOMY.

There are three objections which I have always been in the habit of advancing to students as to the impropriety of a preliminary iridectomy: (a) Two incisions must of necessity give us more corneal astigmatism than one; (b) by a preliminary iridectomy we twice run the risk of infection of the wound; (c) a patient dreads an operation, and there is nothing to be gained in submitting a patient to two operations where one is sufficient and equally good. Moreover, the operation, without preliminary iridectomy or, as it is called, the combined extraction, is an immense saving of time. With a preliminary iridectomy the patient first undergoes an operation, is kept in bed for a certain period, then is allowed to go about as blind as ever for a period of six weeks with the prospect of another operation in the near future. Finally the extraction is made, and then there is another period of confinement to bed. The patient is lucky who is allowed to escape here, for not infrequently there are operations for secondary cataract. After combined extraction a patient may be able to leave with the operation finished, except in cases of subsequent secondary cataract, in ten days, and certainly should be out of the hospital in a fortnight, with the treatment finished so far as operative procedure is concerned.

Quite recently Landolt has given to the world a most valuable contribution on the subject of cataract extraction. In that paper he very strongly advocates the preliminary iridectomy, and that chiefly because it promotes maturity, because it lessens the traumatism at the time of extraction, and because it is easier to rupture the capsule. Far be it from me to say anything contrary to such an authoritative opinion without good ground, for unquestionably Landolt is one of the greatest practical authorities of Europe at this time. But, no matter how great an authority may be, every man is bound to think matters out for himself, and for the reasons above stated I am convinced that in the large majority of cases preliminary iridectomy is a mistake—a needless infliction to the patient. In a few isolated cases I still employ it, as will be shown when I come to speak of maturation. Further, if it comes to be a case of quoting authorities, then we shall find the balance of number, and possibly even of weight, opposed to it.

In one point I am inclined seriously to disagree with the opinions expressed in the paper just mentioned. I do not think that a preliminary iridectomy is such a harmless operation as Landolt believes. Again and again in other men's work I have seen a preliminary iridectomy followed by a considerable amount of iritis, and more than once by suppuration of the cornea. No doubt such operations have been faulty and septic; but this only proves one of my propositions—that there is no good in running the double risk of corneal infection if once is sufficient.

¹ Abstract of paper read at Glasgow Southern Medical Society.

SIZE AND SITE OF SECTION.

I regard the exact position, and even the size of the wound, as of only secondary importance. All that has to be seen to is that the section is of sufficient size to admit of the ready expulsion of the lens, that it is so situated as to interfere least with the acuteness of vision, and that it is not too far in the periphery, for then there may be prolapse of the ciliary body, if not of the vitreous itself. Personally I cannot understand dogmatism in this matter. Recently I found one surgeon in America saying that no simple extraction, that is, one without any iridectomy, should be done without a large peripheral section, while, on the other hand, I find a few highly-respected English colleagues declaring that success in the operation depends on the incision being made in the cornea at several millimetres from its margin. As a matter of fact, I endeavour to make the puncture and the counter-puncture in the apparent corneal margin at such a distance from what we may call the superior horizontal tangent to the cornea as will allow of a 2- or 3-millimetre flap and still permit of my finishing the section well in the cornea. Be it said, however, that I am not in the least put about if by some slight inadvertence I find that I have carried my incision well into the conjunctiva. I think only on one occasion have I had to enlarge the wound—a proceeding which, although it no doubt must occur at times, should not be required in any large proportion of cases. The incision, then, should be ample for the purpose, and in that situation which will least of all interfere with vision. In times gone past many faulty incisions were made from a desire to make the section as small as possible. This arose from an idea that the size of the section, especially at the margin of the cornea, deprived the cornea of a considerable amount of its nutrition, and thereby rendered it all the more liable to necrosis and to suppuration. The discoveries of Lister and others, by showing us exactly the origin of suppuration, have of course made such a view quite untenable.

PREPARATION FOR OPERATION.

While, therefore, the precise dimensions or position of the section are not matters of the first importance, yet it cannot be too strongly urged that the greatest attention should be given to the quality of the cutlery. About eighteen months ago I had a special set of instruments made, all of them being made in every part of metal, and of the highest quality. Moreover, before operating—indeed, just before disinfecting the knife—it is well to test both its edge and point by trying it on a drum or on a piece of chamois leather. For my private operations, after removing all grease, the instruments are immersed in a 1 to 30 solution of carbolic for at least an hour; they are then carefully dried and placed in a metallic box. They are again immersed in carbolic solution just before being used. The personal cleanliness, both of myself and the patient, are matters of the first importance. Where it can be managed, the patient should have a hot bath within half an hour of being put on the table, and bedding should be entirely changed, and a fresh suit of linen put on immediately after the bath. At the time of operation, the patient's face is thoroughly drenched with a 1 to 10,000 solution of bichloride of mercury, special attention being given to the cleansing of the conjunctiva in all its parts. With proper precautions, I have found that even a blenorrhœa of the sac does not prevent success. Quite recently we have operated successfully on three such cases by combined superior section. In all of them the patient was kept under close observation for about a week before the extraction, and the lachrymal sac was washed out twice daily with a saturated solution of boracic acid.

For purposes of cleansing after the operation a solution of boracic acid is better than bichloride. This substance has scarcely any antiseptic properties, and probably sterilised water would be equally efficacious. Bichloride is apt to damage the vitality of the margin of the wound.

Another point on which I lay great stress is the preparation of the cocaine solution. It is always made by myself just before operation with boiling water. It is put into the eye either directly from the bottle or else lifted in by a piece of very clean cotton wool, and thus no dropper is used. Similar precautions are to be taken in all methods of dealing with soft cataracts, whether they be congenital or traumatic.

SUBSEQUENT STEPS OF OPERATION.

Supposing, then, that a suitable section has been made, the next step is to rupture the capsule. That ought always to be done before the iridectomy is made, for then there is never any trouble from hæmorrhage in seeing to incise the capsule. From old habit I employ a sickle-shaped scratcher, although any sharp-pointed instrument will answer the purpose sufficiently well. The incision should be in the form of the letter T, the horizontal portion corresponding with the upper part of the capsule in an upward operation. This seems to give easy egress to the lens, and the horizontal part of the incision makes it less likely that the capsule will be caught in the cicatrix, thus combining the advantage of Knapp's capsulotomy with possibly a freer opening for the lens.

Very often just on finishing the incision of the capsule the operator becomes aware that it is possible to complete the extraction with the utmost ease without an iridectomy. Thus he will notice that the margin of the lens has come very far forward, and is presenting towards the corneal wound clear of the iris. Even under these circumstances I prefer to make an iridectomy. In eight cases I have finished the operation without it, and in four of these eight there has been prolapse of the iris into the wound notwithstanding that at the time of operation the iris was returned well into the anterior chamber, and the eye put thoroughly under the influence of eserine. Such a percentage as that seems to be too high, even although it be urged with perfect truth that a prolapsed iris is not a serious complication. No doubt the eye is still tolerably safe, but we certainly by a prolapse increase the corneal astigmatism, and to a slight extent the risk of infection.

On the completion of the incision and capsulotomy, the next step is the delivery of the lens. Here I think I differ very considerably from some surgeons. In the first place I do not remove the speculum, for it is now that I think it becomes of greatest use. The assistant must hold it so that the patient cannot make the slightest pressure with his lids on the eyeball; a good assistant will easily manage to prevent all such dangerous pressure.

Secondly, I perform all my manipulations by means of instruments, for I think they can be made more absolutely sterile than the fingers. Further, I hold that it is dangerous to make pressure though the eyelid with the finger on the lower part of the cornea when there is no speculum used, for there is then nothing to prevent the patient making violent spasmodic movements with his lids, and thereby not only expelling the lens but also a large part of the vitreous. I use a Snellen's wire vectis and an ordinary curette for pressure and counterpressure respectively, for they answer the purpose admirably, even for such manipulation as is required for the clearing of the anterior chamber of cortex. Moreover, I think that this proceeding has a great advantage over the ordinary finger method, for the surgeon himself makes both the pressure and the counterpressure, and thus can vary the one or other at his pleasure; whereas, in the old finger method as a rule he finds it convenient to make the one, leaving the other to his assistant. That part of the operation known as the toilet of the eye is very easily performed by means of a stream of boracic solution, all blood clot being carefully removed from the retrotarsal folds and from the edges of the wound by a pair of iris forceps. Great pains should be taken to see that the cut edges of the iris are returned to the anterior chamber, and search should also be made with forceps for any traces of capsule. Sometimes I then instil a few drops of a solution of eserine, but generally speaking neither mydriatic nor myotic is employed.

The dressings are of the simplest, consisting of Gamgee's tissue fastened by strips of adhesive plaster or else by an ordinary cataract bandage. Generally speaking eyes operated on by me are dressed every day, but sometimes nearly a week elapses. The two indications which guide me are the presence or absence of moisture and of pain.

That there is iritic irritation in almost every case is, I think, certain; but an acute iritis, followed by the formation of a membrane blocking up the pupil, is generally septic. So far, then, it is a thing which is preventable, and although cases now and again must occur even when the greatest care is taken, yet they should be exceedingly few in the hands of good surgeons. Of course, in these remarks no reference is

made to the formation of a purely secondary cataract, an event which, so to speak, happens in the ordinary course of Nature.

Too much stress seems to be laid by some authors on bruising of the iris. Short of causing necrosis, there is no danger in pressure; at least it seems to me that there is no danger of an acute plastic iritis, for that I believe to be at all times septic in origin.

CONGENITAL AND TRAUMATIC CATARACTS.

Congenital and traumatic cataracts may perhaps best be described together, for such congenital cataracts as I think proper to treat by operation are first made traumatic by a dissection, if seen in early life, but by extraction if not seen till a later period. After having noted the extent and special form of a congenital cataract, the first point to attract attention is as to the advisability or possibility of operation. Generally speaking, these cases ought not to be subjected to operation where, with full correction of all errors of refraction, the vision is $\frac{2}{3}$ or better—that is to say, when the accommodation is active. Under that operation is allowable, if not absolutely necessary.

Three forms of operation appear to be justifiable—namely, (a) iridectomy when the entire lens is not involved, so as to make a pupil in front of a clear portion of the lens; (b) repeated dissections or needling; (c) maceration with extraction. My own preference is certainly for the last, and that for reasons shortly to be stated. Iridectomy is without doubt a perfectly good operation, but before the operation we cannot foresee what will be the vision after cicatrization and correction of any existing refraction errors. Further, it is a generally accepted belief that these forms of cataract tend to extend, and thus a part of the lens which is transparent at present may before long be cloudy or opaque. Again, I do not think that iridectomy can be said to be very much safer than the other operations, for I venture to think that the safety of all these operations is very largely a matter personal to the surgeon, and with proper care none of them ought to be dangerous. Still, I should not like to be too strong on the point, for it is a proceeding which I have rarely adopted, and therefore one on which I have no right to speak strongly.

Dissection is a method more to be commended, and one which gives excellent results. If carefully performed it ought to give a clear central pupil, with a free and movable iris. Were I adopting it as my regular method of operation, I think it is best executed as described in almost every text-book of ophthalmology. This method affords excellent results, but it seems to be liable to one or two objections. In the first place, several operations have to be performed, sometimes as many as seven, on the one eye, before complete results, a process which must tax too much the good temper, if not the faith, of the patient, and must even be irksome to the surgeon. Further, each operation involves the risk of sepsis, and although we know that it is almost impossible to make cataract extractions absolutely aseptic, yet we are bound to diminish the chances of septic infection to a minimum. Again, there are not infrequently inflammatory changes, due to sepsis, set going in the capsule itself, which are apt to cause a thickening of the capsule, which may give both surgeon and patient a good deal of trouble.

For myself, the best way of treating congenital cataracts consists in dilating the pupil thoroughly, and then dividing both the capsule and lens very freely, and the younger the patient the freer, with a Bowman's or Jacob's needle. The patient is then put to bed, but the eye is carefully watched every day by myself or by a trustworthy assistant. Directions are also left with the attendants that if pain set in I am to be summoned at once. The necessity of these precautions will be at once apparent when I describe a case which was under observation only a few months ago. If nothing unusual happens the lens is allowed to macerate away for some days, but never longer than a week, and then the pupil is again dilated and the lens is drawn off. That is most easily done by an ordinary or, perhaps better, straight keratome, which is thrust through the cornea, and the lenticular matter is allowed to escape along its surface. I have not yet found any artificial suction to be required, although I should not hesitate to employ it if necessary. Of course, in all these manipulations a speculum and fixation forceps are used throughout.

Such methods are in the main most suitable for soft cataracts, whether congenital or traumatic; they are perhaps the best for what may be called hard traumatic cataract. In deciding what is to be done in a case of injury to the lens in a person past middle life, the surgeon is sometimes at a loss. For such lenses, on account of their greater hardness, do not macerate so well as a juvenile lens, and on account of their greater size are more apt to cause dangerous pressure. On the one hand, therefore, extraction is less likely to be complete, and a considerable quantity of cortical matter is likely to be left in the eye; while, on the other, leaving the lens to macerate by itself is likely to produce dangerous pressure either on the ciliary body or on the filtration angle, or on both. Taking all the circumstances into consideration, I am much inclined to remove as much of a traumatic lens as I can from an eye at once. If the operation is at all a clean one, no harm can arise by removing as much of the lens as is possible, whereas if you leave it alone you run a good chance of serious, if not fatal, damage to the ciliary body or to the filtration angle. In these cases I do not make the incision with a small keratome, but with an ordinary linear section knife, making the wound just as large as for the extraction of an ordinary cataract. The following case illustrates some very important points.

F. S., a lad of about 15 years of age, had from early childhood cataract in both eyes. There was the usual history of convulsions, and on examining it was found that the cataract was zonular and sufficiently extensive to prevent him reading or writing without bringing the book very close to his face in order to get a magnified image. Following my usual plan, I dilated one pupil widely with atropine, and divided one lens and capsule very freely with a Jacob's needle. On visiting the patient I noticed, as I had expected, a quantity of lenticular matter in the anterior chamber, and therefore left the usual instructions as to being sent for if there was anything like severe pain. On the morning of the fifth day I was summoned at an early hour, and informed that for some time the patient had complained of tolerably acute pain in the eyeball itself and along the branches of the ophthalmic division of the fifth nerve. On examining it was found that there was a good deal of lenticular matter in the anterior chamber, that a part of it was between the iris and the cornea, blocking up the filtration angle and causing increased pressure. Hence the pain, which was accompanied by an increase in the intraocular pressure and a fair amount of deep injection. I at once proceeded to put matters right by the insertion of a straight keratome and the withdrawal of as much lenticular matter as possible. After that the case did admirably, the pain vanishing at once, and the ultimate result was nearly $\frac{2}{3}$.

MODIFICATIONS NECESSITATED BY CERTAIN COMPLICATIONS.

A few words should be said as to the cases in which I still think a preliminary iridectomy justifiable. It is an operation which should only be performed to promote maturity in an immature lens. Thus, if both eyes are so blinded by senile cataract that the patient is prevented following his usual work, and thus practically laid aside with perhaps months or years to elapse before the cataract matures naturally; then an iridectomy will often ripen one lens and permit of extraction, restoring sight to one eye. Probably the drawing off the aqueous by paracentesis would be almost as satisfactory, because it would appear that the ripening depends on the lens coming abruptly forwards and thereby rupturing the capsule. On precisely the same principle, we sometimes see traumatic cataract following an iridectomy for the relief of glaucoma, although the point of the knife may not have entered the lens capsule.

In two respects the coincidence of glaucoma and cataract alters my procedure. In the first place, no ophthalmic surgeon will touch such a case by way of operating for the cataract unless there is fair light perception, for in all such cases there is generally great degeneration, and operation is apt to cause intraocular hæmorrhage. If the light perception is bad, then operation is only admissible for the relief of pain, and then it should be iridectomy, sclerotomy, or, perhaps better, enucleation. Should the light sense, however, be fair, then an iridectomy ought to be made at once and afterwards the case treated by extraction. In these cases, therefore, I make a preliminary iridectomy if the lens is not ripe. Further, I do not invariably make the incision upwards, but, taking a hint from the valuable researches of Mr. Collins, I make my iridectomy at that part of the iris which responds best to eserine. Thus I have made both my iridectomy and extraction almost straight outwards in a case in which only that portion of the iris responded. To do this part of the subject justice would involve a full discussion of the views of Collins and Priestley Smith as regards the treatment of glaucoma, a

subject which, although of the greatest importance, is quite beyond the scope of our present remarks.

After an operation for cataract there must be a great refraction error, which is generally complicated with astigmatism, usually about two dioptries, but sometimes of a much greater amount. In days gone past it was the habit at the Infirmary to give almost all cataract patients convex glasses of $2\frac{1}{2}$ " for near and $4\frac{1}{2}$ " for distance, and not to correct for the astigmatism at all. The arrangement seems primitive, still, that was how it was done then. In all my cases I think it right to correct the error just as accurately as in any ordinary case, and, of course, order the glasses specially. It is true that without this correction patients sometimes see fairly well with the old cataract glasses, but this must be that they either tilt the glass sufficiently to correct the astigmatism, or else that they see with the circle of least confusion, which in an instrument like the human eye must be very nearly a clearly defined image. A Javal's ophthalmometer renders the correction of the astigmatism very simple. With it we ascertain approximately the amount of the astigmatism and the directions of the principal axes. The corresponding cylinder is placed in the trial frame, and the rest is made up by simple spherical lenses.

In conclusion, I have not yet had a single case of extraction go wrong in my private practice. The few extractions that have been lost have all of them been in the hospital. I believe that this is due to the fact that the hygienic conditions are not so thoroughly under my own management in the hospital as they are in private practice. I have never had, either in private or hospital practice, a case of acute plastic iritis ending in closed pupil, much less a case of sympathetic ophthalmia in the other eye. Both of these conditions I regard as being septic, and, therefore, preventable.

A SPECIAL FORM OF OPHTHALMIA TO WHICH HOP PICKERS ARE LIABLE.

By PERCY T. ADAMS, M.R.C.S., D.P.H.,
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For the past six years, during the latter part of August and throughout the month of September, cases of an acute form of ophthalmia, sometimes followed by keratitis, hypopyon, and much subsequent injury to the cornea and sight, have occurred in this neighbourhood among the hop operatives.

CHARACTERS OF THE DISEASE.

Usually the patients came to the hospital with all the signs of acute conjunctivitis; there was often considerable oedema of the lids, lachrymation, or a muco-purulent discharge, together with the brick-red coloured injection of the ocular and palpebral conjunctivæ, which is so often associated with small areas of extravasation where the engorged superficial vessels have given way. This engorgement is seen commonly to follow mechanical irritation of the eyes, from such substances as particles of lime dust or plaster finding their way into the conjunctival sac, and differs much in appearance from the darker venous capillary congestion of the episcleral branches, as the deeper structures become involved.

In some cases the engorgement of the superficial vessels became so great that the deeper vascular system became affected, and the nutrition of the cornea so impaired that a necrosis of the corneal tissues occurred. Acute keratitis and hypopyon were by no means uncommon complications in the more severe forms of this disorder. In one case I also noticed a concurrent affection of the nasal mucous membrane.

Another peculiarity lies in the apparent immunity of men to this disease as compared with women and children. Women and children are more intimately associated with the actual handling of the hop cones in plucking them from the bine, whilst the men are otherwise engaged in the gardens. Men are subject to the disorder, however, and I have seen such. But I have never seen this disease in any other persons save those actively engaged in the hop industry.

Read before the West Kent District of the South-Eastern Branch of the British Medical Association.

ITS DISTRIBUTION.

The disease is sporadic, associated so far as my observations go, with no particular plantation, growth of hops, encampment, or village. To the best of my knowledge it is prevalent mostly at the time of the maturity of the catkins only. It is not infectious in its initial stage, nor, so far as I know, in its purulent condition.

GENERAL CONSIDERATIONS AS TO ITS ETIOLOGY.

I was unable to associate its origin with a catarrhal cause, either from its appearances pathologically, or having regard to the unfavourable hygienic conditions (a very possible direction) under which "the stranger" or "foreign picker" lives during his brief sojourn in the country, oftentimes in damp, overcrowded, draughty, insanitary huts, barns, and tents, amid dirt, smoke, and filthy rags, conditions in themselves predisposing to ophthalmia. The facts pointed to a general cause acting on all the operatives, because undoubtedly the "home pickers" (or local pickers), who are more favourably housed, suffer equally with their less favourably placed co-workers, "the strangers." Apart from the physical signs already alluded to, it certainly appears to partake of a partly mechanical origin.

In two cases that came under my notice, the patients positively affirmed that the advent of their symptoms followed shortly after an accidental rubbing of their eyes with hop-soiled hands. I made observations of the operatives, whilst actually engaged in hop picking, and noticed that the women, whilst bending over the bins, frequently applied their hands to their foreheads to brush aside the hair from the face.

The question then arose, Is it not probable that some of these materials from the hop plants are thus introduced into the conjunctival sac? This subsequently appeared to be the case, for an old woman who for some time prior to the hop picking had attended our out-patient department suffering from entropion (the irritation of which caused her to apply her hand to her eyes frequently) came to me a few days after she and her daughter had commenced hop picking with a much inflamed eye, which I recognised to be similar in appearance to those which we were wont to associate with the hop operatives. Without putting any questions to her, both she and her daughter (who was at work with her at the time) maintained that it came on shortly after rubbing "some of the stuff from the hops" into her eyes from her hands. Her eyes were seen just prior to the attack, and neither the cornea nor the conjunctiva were affected.

The patients complain of an acute smarting pain, which becomes rapidly worse. This stinging sensation I have also known to affect the skin as well as the eye after a stroke from the hop bine alone. The hands are often much soiled and blackened with the resinous matter from the hops, and the odour of the volatile oils is very noticeable about the patient's clothing.

The usual mode of introduction of an irritant from the hop appears therefore to be by the hands, and this supposition is frequently borne out by the testimony of the patients themselves. The older agricultural labourers have told me that, prior to the introduction of the lever presses for compressing the dried hops into "the pockets" (canvas bags), this work was performed by treading them in with the feet. This created a considerable quantity of dust, and it was not an unusual occurrence for their eyes to become affected from the hop dust; since the introduction of these presses this no longer occurs.

I made inquiries of Mr. Higgins and Dr. Brailey, the ophthalmic surgeons at Guy's Hospital, whose large hospital practice is situated among hop warehouses and hop warehousemen. And in their letters to me they both stated that they had not noticed any association between the particular symptoms I mentioned and hops. But, at the same time, both spoke of having noticed on the one hand a return, after hop picking, of his cases of granular lids very much worse; whilst Dr. Brailey added: "I have seen eyes bad after hop picking, but can refer nothing to dried hops." Another ophthalmic surgeon, of nearly thirty years' experience amongst the hop industry, tells me that he has frequently noticed an association between hop cultivation and an eye disease of a similar character to that described here.