INTRODUCTION TO A DISCUSSION ON THE TREATMENT OF GLAUCOMA.

In the Section of Ophthalmology at the Annual Meeting of the British Medical Association, held in Leeds, August, 1889.

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THE discussion which I have been requested to open concerns a large subject, and one in which our judgments can be helped only by our experience. There is at the present day not much room for speculation as to the theory of the glaucomatous process when we have to decide as to the best treatment of a case of glaucoma. Valuable as have been the labours of Mr. Priestley Smith, Dr. Brailey and others, in respect to the pathological anatomy of glaucoma and its antecedent conditions, they cannot be held to have helped us much in reference to the selection of special methods of treatment as adapted to special cases. As to these, we must trust chiefly, if not solely, to the recorded experience of those who have practised them. Impressed with this fact, and seeing around me not a few whose experience is more valuable and extensive than my own, I do not intend on the present occasion to occupy much of your time with statements of my own views. I shall, I believe, better discharge my duty if in a simple and literal manner I introduce the subject for your discussion.

My first endeavour must be to limit and define the questions which we have to consider. I expect that it will be generally admitted that for all forms of primary glaucoma approaching acuteness, iridectomy holds its ground as the operation which affords the best prospect of advantage with the least risk. In these cases eserine may give temporary relief, but it is not to be trusted. If there is any exception to this statement, it is as regards those cases in which acute symptoms have been developed by the use of atropine. In some of these it would appear that eserine may suffice for a complete cure. In saying this I am thinking of cases which have been recorded by Mr. Snell and others. As regards other operations, sclerotomy, with its various modifications and the so-called cyclotomy, I think we may say that although very useful, they are, in competition with iridectomy, only second best. To this another statement of much importance may perhaps be added. It is that eyes saved from acute glaucoma by operation (I mean those only in which a recovery has been completed) seldom, or never relapse. My own experience supplies me with no exception to this. Glaucoma scarcely ever recurs in an eye which has been completely relieved by an iridectomy. I make this assertion in reference chiefly to acute forms of the disease, but it will be of interest to note whether it be not true also of the recurrent or subacute form, and even of glaucoma simplex.

Having, then, asked you to admit that iridectomy, or its equivalent—and it has perhaps no equivalent—is the established and unassailable treatment for acute primary glaucoma, I have next to say a few words as to secondary forms. We meet with increased tension of the glaucoma type in connection with a great number of other maladies, after injuries, and in association with relapsing cyclitis, with iritis, and even with keratitis. In cases of syphilitic keratitis, its long persistence may become a distinct source of danger to the eye. In a certain number of these cases of so-called secondary glaucoma, it may be open to doubt whether the atropine, so frequently and often so freely used for their treatment, may not be the cause of the increased tension, rather than anything inherent in the disease itself. At any rate, it may be broadly said that in all these cases atropine should be at once laid aside and eserine substituted. This change will often suffice for the removal of tension; if it does not, iridectomy should be performed. The mention just made of secondary glaucoma and its connection with iritis, etc., may suitably introduce the question, whether not a few of the erratic forms of increased tension be not in direct association with gouty tendencies. I allude especially to the recurring subacute and feebly congestive forms which we meet with in persons much below the age at which glaucoma usually shows itself. My experience has been that, in most of these, there is a

strong history of inherited gout. It by no means follows from this that what are popularly considered the specifics for gout will prove useful, for the association is with inherited tissue-proclivity, and not with the dietetic habits of the individual. Some good will, however, I believe, always be obtained from such remedies as aconite, from the free use of counter-irritation, and, above all, from prolonged and definite change of place of residence. My experience has been that most of these cases are cured by iridectomy, but that the results are by no means so sure as in the acute disease, or in persons more advanced in years, and I recommend it with some misgiving, well knowing that it is sometimes followed by disastrous results. I could produce, however, some very triumphant cases in this class. In one instance, a lady in whom, at the age of 34, I operated on both eyes, retains now at 50 almost perfect sight, although she has used her eyes most freely. I have, therefore, no hesitation in saying that in the recurrent glaucoma of the young, associated, as I think it usually is, with gout, iridectomy is indicated if eserine is found insufficient.

The disease known as *Hæmorrhagic Glaucoma*, or rather glaucoma with hæmorrhages, is probably in very frequent dependence upon gout. It is probable that the hæmorrhages are usually secondary to the increase of tension, and due to the venous turgescence caused by it. Thus they are evidences of weak vessels, and as such their evil prognosis may be well understood. No more unfavourable cases for operation can be mentioned than glaucoma of the hæmorrhagic type. They are usually in the first instance examples of simple glaucoma, and as such liable to all the risks which are well known to attend it, and next they have the added danger of proved unsoundness of vessels. Yet I do not think that in cases which otherwise demand operation and in which eserine and other means have failed, iridectomy should necessarily be declined because of the presence of retinal hæmorrhage. The operation should, however, be deferred as long as possible, for the prognosis is very unhelpful.

Having thus dealt with the treatment of acute glaucoma, with some of the various secondary forms, that caused by atropine, the recurrent and subacute forms seen occasionally in young persons, and finally with the hæmorrhagic glaucoma of advanced life and damaged vessels, there remains, I think, only to speak of the most chronic form of all—the insidious painless type known as *Glaucoma Simplex*. Here, if I mistake not, we approach the main topic of our discussion. It is for simple glaucoma that as yet we have no satisfactory treatment. In respect to it opinions are still at variance, and whilst some hold that the operation, although uncertain and often disappointing, if not injurious, ought yet to be performed; others think that it is better to trust to eserine, strong convex glasses, remedies for gout, and the like. As to the operations to be done, opinions are also somewhat divided, and good authorities there are who hold that sclerotomy does more to relieve the tension than iridectomy. The distrust in iridectomy in this disease pervades the whole ophthalmic profession, and is not restricted to any school or country. On the Continent, and especially in France, it has perhaps been yet more strongly expressed than amongst ourselves. Everybody has had case after case in which after the most careful performance of iridectomy, the tension has promptly returned and the disease progressed, if anything, more rapidly than before. In some instances it has resisted repeated operations, and in many the patient, disappointed by the first, has declined to submit to others concerning which nothing more definite could be promised.

I do not possess any statistics of my own experience in reference to the treatment of chronic glaucoma which would be in the least worthy of your attention. I must be content to record only my general impressions. As regards the operative treatment, if I were to speak solely of the strictly simple cases, I should have to record very discouraging results. I have had repeatedly cases in which, after the performance of an iridectomy, which appeared to be quite satisfactory, the patient never again saw well, and the disease progressed with seemingly increased rapidity. I have had exceedingly few in which the disease was arrested. Nor have such items of knowledge as have come under my notice, from the practice of my friends, been favourable. Having become, as a rule, reluctant to operate I have, in several cases, known that my patients passed into the hands of other surgeons. In no single case of this kind in which I have been informed of the result has it been satisfactory. It is right that I should explain that the impression which I have just stated is that which was in my mind when I commenced the preparation of this paper. The result of

the references to my notebooks, which I have made during its preparation, has been to make me feel that I had taken too gloomy a view of my results, and allowed unfavourable cases to make too deep an impression on my memory.

As regards the causes of disappointment after iridectomy for chronic glaucoma they have, in my cases, been various. In very few hæmorrhage, in some speedy recurrence of tension, in some iritis and irritability, in yet others rather rapidly-increasing pallor of the disc, with only doubtful increase of tension. The operation which I have done has almost always been iridectomy upwards. I have not tried sclerotomy more than once or twice. My iridectomies have perhaps, as judged by recent standards, not been always sufficiently large, nor have I always been persevering enough in following up the disease by repeated operations when tension recurred. Some differences in practice in these respects may perhaps explain the fact that the picture drawn by Mr. Nettleship in the painstaking record of his operation results, published in the *Moorefilds Reports*, is in brighter colours than any which I can offer. My own results, from operations in acute glaucoma or any type approaching to it, have been most satisfactory, but I must admit that those in the chronic forms have been but too often most discouraging.

That it is possible for the nervous system in some way to take a large share in the development of glaucoma in eyes predisposed to it, is, I think, very probable. The onset of the disease is not infrequently referred by the patient to a mental shock. In a remarkable case of this kind I recently operated on both eyes for acute glaucoma in a lady who had been suddenly awakened in the middle of the night by cries of "Murder" in the next house. She was much alarmed, and within two hours one of her eyes became very painful, and the next day the other followed. She could not remember that she had had any premonitory symptoms.

Several cases of simple glaucoma which I had under observation, and in which the discs have shown steady increase of pallor after the operation, have been accompanied by great depression of spirits, in some instances amounting to melancholia. I find also in the records of cases by other observers that mental disturbance has been observed in association with glaucoma. Mr. Nettleship has especially noticed in connection with glaucoma in early life that his patients were sometimes defective in intellect.

No one can doubt the extreme importance as regards the prevention of glaucoma in all its forms of the employment of appropriate convex glasses. This applies, at any rate, to those cases—a large majority—in which glaucoma occurs in association with hypermetropia and presbyopia. As regards the exceptional cases in which one meets with it in myopia, it may be that the disuse of concave glasses is the measure indicated. Mr. George Walker, of Liverpool, has enthusiastically advocated the use of strong convex glasses as a measure of treatment after glaucoma has declared itself, and has recorded some cases in which great benefit appeared to be obtained. His recommendation certainly seems worth consideration, as also the associated proposition that it may be well to encourage presbyopic hypermetropes to use somewhat stronger glasses than are absolutely required, with the hope of preventing the development of glaucoma. In this way conditions analogous to myopia may be artificially induced, and they are well known to be but little liable to take on glaucoma.

I have not used hitherto the term "malignant glaucoma." I find this term employed by writers with, perhaps, no very definite significance. At any rate I have not been able to give a more precise meaning to it than simply *glaucoma which relapses in spite of operative treatment*. Inasmuch as these relapses occur under various conditions, it seems scarcely desirable to employ for them a somewhat equivocal expression, which might imply a greater approach to sameness than they really display. In some of the worst forms of recurrence, with persisting tension, the condition may probably be associated, as has been suggested by McHardy and others, to displacement forwards of the lens. In such cases extraction of the lens, although under some conditions a dangerous procedure, is the measure indicated.

Before I proceed to sum up the points for our discussion I may perhaps be permitted to suggest that the term glaucoma, unless we are content to translate it as simply equivalent to increase of tension, has perhaps almost served its purpose. The cases in which increase of tension constitutes the most dangerous factor are to be classified in groups, which differ widely from each other. It is only regarding some of them that our information is as yet at all nearly complete. Much remains for careful observers to do before we can feel confident as to the nature, causes, and natural

course of what we call chronic glaucoma,¹ more especially in its simple form. What we have to seek are not the rules of treatment for a substantive malady—"glaucoma," which is to be considered as being always the same in nature, however different in rate of progress—but rather those which may apply to increase of eyeball tension occurring under a great variety of clinical conditions and in connection with very various causes.

I have already referred to the very excellent lectures on the treatment of chronic glaucoma which were recently published by Mr. Nettleship in the *Ophthalmic Hospital Reports*. From them and from the papers of Dr. Brailey and Mr. Priestley Smith, Mr. Snell, Mr. McHardy and others I have borrowed very freely in what I have said. I will now venture to submit for your discussion the following propositions:—

1. As a rule a free iridectomy is the safest and best treatment for all forms of primary glaucoma.

2. It is always well to use eserine before resorting to operation. In a very small minority eserine will be found to completely relieve the symptoms, and in a still smaller group the relief given by it may be permanent.

3. The continued use of eserine will very seldom suffice to prevent the recurrence of glaucomatous tension, and in any case in which, in spite of it, the sight is declining and the field contracting an operation should be resorted to.

4. The cases in which eserine is most useful are, first, those in which the disease has been induced by atropine, and next those in which the disease recurs after long intervals.

5. The more nearly any case approaches to the type of acute glaucoma, the more probable it is that iridectomy will put an end to the process.

6. The more absolutely simple the case is, that is the more entirely free from pain, congestion, perception of haloes, etc., the less is there to be hoped from an operation.

7. Cases of simple glaucoma are not as a rule benefited by the continuous use of eserine, and the choice lies between letting the disease run its course and an operation. The progress of simple glaucoma is often very slow, and the interval is often long before the second eye is affected.

8. It follows from the last proposition, if simple glaucoma occurs in an old person, or to one in feeble health, that the patient's sight may easily last out his life.

9. Iridectomy for simple glaucoma is often followed by immediate deterioration in sight and advancing pallor of the disc, with or without recurrence of increased tension. It can by no means be regarded as a harmless operation. When iridectomy is done for simple glaucoma, it should always be done very freely, and the patient should be prepared for the possibility that a second operation may be requisite.

10. In the first instance, iridectomy is preferable to sclerotomy

¹ In searching my case-books for examples of simple glaucoma, I found the following under date February 8th, 1884:

"Mr. Mackinlay, of Stratford Place, brought to me a very interesting example of the chronic form of glaucoma. It affected both eyes, and almost equally, and had reduced the vision to 10 Jäger left eye and 12 right eye respectively. The patient was a gentleman from Cornwall, a stout florid man, who had suffered from gout. He said that he had had some eye symptoms for three years, seeing colours round flames, etc., but his more definite symptoms dated back only for three months; during that time his vision had rapidly declined. He could still see 28 with a little puzzling. The increase in tension was very decided, almost 2. The discs were cupped, and there was vigorous arterial pulsation. There was no dusiness of the eyes, and the media were quite clear. It was at Mr. Bowman's suggestion that Mr. Mackinlay brought him to me, as it was recognised to be a case in which an operation might very possibly prove disappointing. It was clear, however, that there was nothing else to be done, and I advised that both eyes should be immediately iridectomised."

Thinking this a good case to follow up, I applied to Mr. Mackinlay for a report as to result, which he kindly sent me as appended:—

Sequel of Case seen in Consultation with Mr. Jonathan Hutchinson, February 8th, 1884.—Patient a male, aged 57. Glaucoma. February 10th, 1884. I did iridectomy upwards, both eyes, under ether. February 23rd. Patient returned to the country. April 20th. Came to see me. Has had some photophobia, which is now lessening. October 5th, 1885. Came to see me to-day. Right eye tension normal, and left eye somewhat +? Right eye vision = J. 8 slowly and J. 10 well; left eye vision = J. 8 slowly and J. 10 well, of course with glasses for his presbyopia; has given up smoking, and only takes a moderate quantity of port wine occasionally. October 25th, 1886. Patient wrote to me (*vide letter*) saying "the eyes are about the same as when you saw me last," etc.—J. G. MACKINLAY, August 8th, 1889.

In the letter referred to the patient states: "I went and saw the *Mikado* last week, sat it all out; can manage to read letters and telegrams, but cannot read the newspaper. I never use the discs or drops, as I find I am better without. I can do with any amount of light, whether it is moonlight, electric light, or gas light. Altogether I think I am very fortunate."

At the present date (August, 1889), in answer to inquiries, the patient reports that he keeps his sight as at last note.

but if a relapse have occurred, then the latter may, in the hands of one well experienced in its performance, be a better procedure for a second operation.

11. A certain number of glaucoma cases more especially those occurring in young adults, and in association with a definite inheritance of tendency to gout, should be treated with reference to that fact.

12. A certain number of cases of secondary glaucoma, especially those in connection with iritis, cyclitis, etc., are susceptible of permanent relief by eserine, and do not require an operation. This remark probably applies to most cases of increased tension in association with interstitial keratitis.

13. Although, as has been admitted, the prognosis after operation for simple glaucoma is always doubtful, it is yet the surgeon's duty to resort to operation in all cases in which the disease is definitely advancing, very old patients being alone excepted.

14. If after an operation for glaucoma, recovery has once been well established, and the increase of tension completely relieved, it is very rare indeed for the disease to recur. Eyes once saved usually wear well.

The PRESIDENT (Mr. Critchett) tendered the cordial thanks of the Section to Mr. Hutchinson for his admirable and exhaustive address. He agreed entirely with the large majority of the propositions which had been brought forward, and it was only on some minor points that he ventured to differ. He was inclined to doubt the wisdom of making a very large iridectomy in cases of simple glaucoma. The plan which he followed was to make an iridectomy of moderate size, using by preference a keratome, and making his incision in the sclerotic. If the anterior chamber proved to be shallow, he passed the point of the keratome slightly to one side as soon as it entered the anterior chamber, so that he might have the shelter of the iris both in introducing and in withdrawing the instrument. Should this operation not be successful in relieving the increased tension, he always supplemented it by the performance of sclerotomy, carrying his knife well back into the sclerotic, and leaving nothing undivided but the conjunctiva. This latter operation might be repeated whenever the condition of the eye demanded it, and his custom in dealing with cases of glaucoma simplex was to inform the patient, first, that the initial operation might probably be followed by some appreciable declension of sight, and, secondly, that the treatment of the case might involve several operations. The method described above had given very satisfactory results in many instances. Mr. Critchett used pilocarpine rather more frequently than eserine, because the latter often produced troublesome conjunctivitis.—Dr. MILES, in referring to the operation of iridectomy preparatory to sclerotomy for chronic glaucoma, said that he made the smallest iridectomy possible above with a Tyrell's hook, solely with the object of making a large sclerotomy three days afterwards, cutting through the whole segment of the sclera, and leaving no bridge; prolapse of the iris was thus rendered impossible.—Dr. DAVID LITTLE (Manchester) directed his observations on the treatment of glaucoma to the usual form of the disease, and first as to the premonitory stage. In this stage one frequently got a clear history of obscurity or dimness, iridescent vision and other minor symptoms, lasting for a short time, then passing completely away, and then recurring again and again at longer or shorter intervals of time; but it was not often one saw a case during the attack. It was quite certain that such cases at some time or other broke out into acute or subacute glaucoma, or developed into the chronic form, and the danger was that they might not come under the ophthalmic surgeon before sight was seriously and permanently damaged. He considered therefore it was of the greatest importance to deal effectually, if possible, with this disease, in the very earliest stage. At one time he had been contented not to interfere with those cases, beyond correcting the refraction, and watching carefully till the disease had become more pronounced. Since the introduction of eserine, this remedy checked the premonitory attack at once, and so long as it was used, there might be no recurrence, but if discontinued the attack recurred. He had watched cases treated in this way for twelve and even eighteen months, and his experience was that the eserine treatment was not permanent. It was of no use in chronic glaucoma. For some time now he had been in the habit of recommending and practising a small upper iridectomy in all cases in which the premonitory stage had been distinctly and satisfactorily made out. He had treated more than a dozen cases in this way, and all with perfectly good results. It might be thought

bold and risky practice to perform iridectomy on an eye which appeared at the time in all respects normal; but if carefully done under cocaine or chloroform, it was perfectly safe. In acute and subacute glaucoma he always performed iridectomy, using eserine preparatory to the operation. In the chronic form his practice was the following: In cases unattended by an increase of tension and of slow progression, he left them alone; in other cases with tension above normal and which were usually more rapidly progressive, he had always found operation of the greatest benefit. After an extended trial of sclerotomy, he had now almost abandoned it entirely, preferring iridectomy as the more reliable operation. In most cases he used a bent keratome, broad and short pointed, but where the anterior chamber was shallow or the eye deeply set, or in a prominent eyebrow, he selected a Graefe's knife.—Mr. BERRY referred to Lojetchnikoff's statistics.—Dr. MACNAUGHTON JONES said he particularly wished to draw attention to the advantage of pilocarpine over eserine in various glaucomatous conditions. He had in 1879 read a paper in the Association on the relative advantages of these myotics. The irritation and pain often attending the use of eserine were absent with pilocarpine. In those cases of acute glaucoma following the use of atropine he had known the sudden instillation of eserine cause retinal hæmorrhage. Lately he had used in some cases $\frac{1}{2}$ or $\frac{1}{4}$ per cent. of cocaine with pilocarpine or eserine. He instilled three cases of the occurrence of acute glaucoma following nervous shock. In these the disease had been allowed to drift, no iridectomy being performed, and permanent blindness resulted. He was in favour of iridectomy in chronic glaucoma, rather than sclerotomy. This conclusion was come to from the far more satisfactory results. He preferred the keratome for operating. He specially drew attention to the relation existing between inherited gout in women and the occurrence of glaucomatous symptoms in women during the menstrual epoch.—Mr. CROSS said in simple chronic cases of glaucoma, where iridectomy promised so little, the use of mydriatics had seemed to him of extreme service, and so long as the field of vision and central acuteness were maintained he would do no operation, and he had several patients whom he had thus satisfactorily watched for several years; but if the eye were losing ground he performed sclerotomy with a keratome, leaving the iris intact unless it should prolapse, when the sclerotomy must be converted into an iridectomy. With the keratome the sclerotomy could be made very scleral and oblique towards the corneo-iridic angle. In any eye, when the pupil did not perfectly contract to eserine, he should recommend iridectomy. Sclerotomy he only used as a part of the treatment by eserine, and when the pupil freely contracted. He thought, in women, glaucoma was particularly common at the menopause. Here iridectomy had usually been done with advantage; but, as the normal loss of blood did not occur the eye got congested and the tension of the eyeball again rose. The treatment in this case clearly should be energetically applied to the menstrual function. With regard to the rise of tension in interstitial keratitis, as alluded to by Mr. Hutchinson, this, the speaker thought, usually depended upon specific inflammation of the ciliary body, which then obstructed the filtration angle.—Dr. HILL GRIFFITH said the smallness of the number of cases of glaucoma in Scotland, as compared with England, was possibly due to the tendency to gout being very much less. He was satisfied with the curative effect of iridectomy in all cases except glaucoma consummatus. He based his opinions on 60 tabulated cases of his own, and about 500 he had seen during his connection with the Royal Eye Hospital, Manchester.—Mr. MACKINLAY said he quite agreed (as he believed they all did) with Mr. Jonathan Hutchinson's remarks as to the employment of iridectomy in cases of acute glaucoma, and for this disease he believed it to be the remedy above all others; but with simple passive glaucoma the matter was different, and he felt that with ophthalmic surgeons a very grave responsibility rested in advising their patients for the best when suffering from that dire disease; and although he could confirm Mr. Berry's statement as to the late Mr. Walker's remarks about its rarity in Scotland, in London, at any rate, they had cases more or less always under their care. He had but little personal experience of sclerotomy, but from cases which he had seen and heard of and read of he had not gained sufficient confidence to recommend it in preference to iridectomy; and when eserine and pilocarpine failed, as they generally did sooner or later, valuable as they often were for a time, he advised the patients to have iridectomy performed, explaining, at the same time, its risks and uncertainty of success, as he did not like to stand by and watch them going hopelessly

blind. He used a narrow linear knife, preferring it for several reasons to any form of keratome; and he considered that the iridectomy should be a large one, and the incision made, as Graefe pointed out, 1 millimètre behind the clear cornea. His colleague, Mr. McHardy, had also pointed this out, and read a paper on the subject before the Ophthalmological Society in 1884. He then stated that the external chord of the section should be 10 millimètres, or, better still, 12 millimètres, that is, about the same as the diameter of the cornea. Without doubt they did not know all the predisposing causes of glaucoma; in some cases certainly there might be a neurotic condition, and in many of them a gouty diathesis existed. In the case of the gentleman to whom Mr. Hutchinson referred, whose eyes he (the speaker) iridectomised in the spring of 1884, there was a clear history of gout, as he had had an acute attack in his feet some two years before.—**DR. SWAN M. BURNETT** (Washington) thought that this discussion had fixed iridectomy as the sheet anchor in glaucoma more firmly than it had ever been. It had also, it seemed to him, lent more hope to its victim of the chronic simple form than they had hitherto dared to indulge in. In regard to the latter form, it had always been a question with him as to whether all the cases so called were really glaucoma as they at present understood it. He was quite sure that many of them were what Graefe first called "atrophy with excavation," and were primary nerve lesions, in which, of course, an operation could be of no benefit. In respect to the influence of nationality and race, he would state that his clinic at Washington had a large contingent of negroes, and while they had an immunity from certain eye diseases—notably trachoma—they still suffered from glaucoma, and particularly, it seemed to him, in the chronic simple form.—**MR. ADAMS FROST** said they appeared to be all agreed as to the treatment of acute glaucoma, at any rate with regard to the eye actually affected. Dr. Little had, however, raised the question, What was to be done with the second eye when it presented only premonitory symptoms? He had hitherto performed iridectomy as a preventive measure. But a catastrophe that recently occurred to him would make him hesitate in the future. He had operated with success on the first eye, vision being improved from hand-reflex to $\frac{1}{5}$; the other eye had $\frac{1}{2}$, but the patient lived at a distance, could not come again, and had seen haloes. Accordingly he performed iridectomy. On removal of the bandage he found vision only perception of light, and the fundus reflex absent. This was probably due to hæmorrhage into the vitreous, as the lens was clear. Sclerotomy he formerly practised, but abandoned it because of its uncertainty, both in regard to its results and to the operation actually performed. It always seemed to him that they were working somewhat in the dark, and that the operation varied very much. With regard to the question of operating at all in glaucoma simplex, he relied more upon the visual field than upon the intraocular tension. As long as the field underwent no further contraction, he was contented with using eserine, but he preferred iridectomy as soon as the field definitely got worse. He always used a Graefe's knife in preference to the keratome, partly because the anterior chamber was often shallow, and partly because, since cocaine had come into use, he had more and more discarded the keratome, because, if the patient proved unsteady, he thought the risk of wounding the lens was lessened.—**MR. OLDHAM** had been very unhappily impressed with the results he had observed of iridectomy performed for chronic glaucoma, so much so as to have almost abandoned the operation in such cases. He recommended the use of convex glasses, with the instillation of eserine, or, still better, pilocarpine, the operation only to be performed in case of very definite exacerbation of the symptoms.—**MR. HUTCHINSON**, in reply, thanked those who had spoken for their kindly criticisms of his conclusions. He did not think that it would be profitable to attempt to follow the statements of each speaker separately. He would endeavour to take them *en masse*, and was glad to know that in the main there was a remarkable unanimity; almost all appeared to agree in the opinion that iridectomy was, on the whole, the best operation for acute glaucoma; and, further, that there was no need for the very large removals of iris which some had recently advocated. In reference to glaucoma simplex, Mr. Oldham had expressed a strong opinion against any operative interference whatever. The balance of judgment was, however, the other way, and seemed inclined to the view that repeated operations ought to be performed. Nothing that had been said induced him to change his opinion as to the comparative merits of sclerotomy and iridectomy. In the future, in chronic cases, he thought that he should still use iridectomy,

and that he should not aim at making an extravagantly large coloboma. He should, however, from the outset bargain with his patient for as many and as frequent repetitions of the procedure as might be necessary. The patient's mind should be prepared beforehand for this, and then there would be less of disappointment at apparent failure and more willingness to go on with operative treatment. Meanwhile, more detailed and larger statistics as the results of treatment and no treatment in glaucoma simplex were much to be desired. As to pilocarpine, which several speakers had praised as preferable to eserine, he had purposely not referred to it in his paper, as he had not had experience of its use. He had not found solutions of eserine open to the objections which had been described, and thought that it accomplished without inconvenience all that could be hoped for from myotics. Probably the strength of the solution used made the difference. He was accustomed to use a weak one (half a grain to the ounce or less).

A DISCUSSION

ON

THE TREATMENT OF IMMATURE CATARACT.

In the Section of Ophthalmology at the Annual Meeting of the British Medical Association, held in Leeds, August, 1889.

I.—This discussion was opened by the President of the Section **MR. G. ANDERSON CRITCHETT**, in an address which was published in the JOURNAL of August 24th, p. 414.

II.—**T. PRIDGIN TEALE, M.B., M.A., F.R.S., F.R.C.S.,**

Consulting Surgeon to the Leeds General Infirmary.

MR. TEALE described his method of extraction without iridectomy. He said his earliest experience in extraction of cataract was with the semilunar flap. With this operation he had, on the whole, very good results; but the operation was a difficult one, and was liable at times to serious drawbacks from large prolapse of the iris. When the various modifications were introduced by v. Graefe and others he departed from the "old flap" for a time and used one of the modifications combined with iridectomy which were in vogue. His results were, on the whole, less satisfactory than with the old flap. He resumed the flap operation, modifying it sometimes in the direction of making a shallower flap. For about ten years (from 1863 to 1873) he oscillated between the two methods, and then settled down finally into the operation now described, which, with occasional exceptions for special reasons, he has followed consistently for the last sixteen years. In very rare cases he performs a preliminary iridectomy. The knife he uses is a very narrow-bladed Sichel's cataract knife, made at the instance of Mr. Hartley. The knife enters the cornea close to its outer margin about the level of its horizontal equator, traverses the anterior chamber, and makes a counterpuncture at a corresponding point at the inner margin of the cornea. As soon as the counterpuncture is well established and the point of the knife projects about one-eighth or one-sixth of an inch, the edge of the knife is turned rather rapidly forwards, and the section is completed by a vertical cut through the remainder of the tissue of the cornea. The horizontal portion of the incision is about midway between the margin of the pupil and the base of the iris. After the extraction of the cataract the shallow flap which has been made falls into its place and fits accurately, leaving an absolutely smooth surface. The perfect cases are most perfect, and are unapproachable by any operation of which iridectomy forms a part; and the less perfect cases obtain, as a rule, very useful sight.

III.—**H. BENDELACK HEWETSON, M.R.C.S., F.L.S.,**

Ophthalmic and Aural Surgeon, Leeds General Infirmary.

My object in joining in the discussion upon the operation for senile cataract is not so much to speak on the subject *de novo*, but rather to supplement what I have already said at the previous meetings held at Cardiff, and, last year, at Glasgow, by showing a representative series of cases upon which I have operated without iridectomy in either eye. It will be seen that the section is made with a (double-sized) Graefe's knife (which has been made for me by Messrs. J. Wood and Co., of York), at a point either above a line drawn midway between the upper edge of the cornea and