spot probably participating in the characters of the lining membrane.

The operation for congenital phimosis, which I described very briefly seven years ago in the *Medical Times and Gazette*, has been performed frequently since then by myself, and by several other surgeons, with unvarying success. It is a significant circumstance, that neither I nor any surgeon with whom I have communicated have ever found a prepuce that was too long after the efficient removal of the phimosis by the operation which I am about to describe.

The principle of the operation which I practise is this. An incision is made in the long axis of the penis, on each side of the preputial orifice, which divides a small portion of skin and a larger portion of lining membrane. The incisions, when the prepuce is retracted, assume a linear form at right angles to the direction in which they were made.

The details of the operation are these. One blade of a pair of small round-pointed scissors (Critchett's scissors for the subconjunctival operation for strabismus answer admirably) having been passed through the preputial orifice, both skin and lining membrane are divided to the extent of a quarter of an inch. The incision is made first on one side, and then precisely in the same manner on the other. The prepuce is now retracted as far as the incisions will permit. This proceeding brings more lining membrane into view between the lips of the wound. As much of the lining membrane as is thus exposed is divided by a second incision on each side. The operation is now complete, and the prepuce may be easily retracted. The incisions, which were made in the long axis of the penis, after retraction of the prepuce become linear in a vertical direction, and almost imperceptible in the circular folds of the retracted foreskin. In the after treatment, the prepuce should be kept back or frequently retracted. In children, an able medical friend considers occasional retraction (say once daily for a week or ten days, until the wounds have perfectly healed) to be sufficient.

The extent of the incisions may be a little less in children and in slight cases, and a little greater in adults and in severe cases. The scissors must be small. I have several times, where there has been retention of urine, found the introduction of a small probe a proceeding of some difficulty.

Fig. 1.—First incision. (In this and the next cut the flat side of the scissors is too clearly represented.)

Fig. 2.—Second and last incision. (The wound made by the first incision is not sufficiently large in the figure.)

Fig. 3.—Direction of the wound after retraction.

The operation just described possesses the double

merit of dividing the constricted parts completely, and the constricted parts only. Considerable experience justifies me in claiming for the operation the following advantages. The wounds, being small, heal rapidly. No ligatures are required, and no sutures; no assistants, and no instruments, save the small scissors. Not an hour's confinement to bed or home is required. This great advantage was well seen in the case of a naval officer who had acquainted himself with the nature of all the operations for phimosis, mine included, in the library of the assistant-surgeon of Her Majesty's ship *H—*. He travelled from Plymouth to put himself under my care. I operated on his first visit to my rooms. He immediately walked to his hotel with ease, and walked out several times during a stay of two days in Birmingham. On the third day, he travelled to Plymouth with perfect comfort.

Lastly, the relief is complete and permanent. There is no deformity; and the cicatrices are found with difficulty, and only by means of a good light.

SOME ACCOUNT OF THE OPERATIONS PRACTISED IN THE NINETEENTH CENTURY FOR THE RELIEF OF TENSION OF THE EYEBALL, GLAUCOMA, ETC.

By J. VOSE SOLOMON, F.R.C.S., Surgeon to the Birmingham and Midland Eye Hospital.

[Read before the Midland Medical Society, February 3rd, 1863.]

THE earliest notice of section of the ciliary structures* for the relief of intraocular tension is found in the *London Medical and Physical Journal* for the year 1802 (vol. vii, p. 209). Dr. Whyte there states, in a most interesting and ably written paper, that in cases of enlargement of the anterior hemispheres of the eye, occurring in Europeans, in consequence of incautious exposure of the eye to a tropical sun, whether complicated by congestion of the choroid veins ("dilated veins of the albuginea") or not, he had derived great advantage by puncturing the eyeball with a couching-needle. His incision was made through the sclerótica into the posterior aqueous chamber, the instrument being carried "behind and parallel to the iris". He directs, "the outlet" (incision) should be "proportioned to the existent expansion"; and states that by this procedure he had

extracted cataracts, ever without accident, and often with success. From this statement, I conclude the instrument used by Whyte was a broad cutting-needle. (*Vide* Diagram a.) The following parts would be divided by such an incision: the conjunctiva, sclerótica, radial fibres of the ciliary muscle and ciliary processes. The accidents which I should apprehend from this operation are, traumatic cataract, prolapse of the iris, and a trouble-

* The terms ciliary structures, section or division of the ciliary structures, are used throughout this paper for convenience of expression, and not because they are found in the papers or works under review.

some inflammation of the sclerotica and ciliary processes.

Six years after the publication of the volume containing this paper, which shows Whyte to have been a surgeon of great boldness and originality, we meet with a short article from the pen of Mr. Wardrop in the *Edinburgh Medical and Surgical Journal* (vol. iii, 1807), on the Relief of Inflammation of the Eye by Opening the Cornea and Evacuating the Aqueous Humour. (Diagram b) Mr. Wardrop followed up his investigations, and in 1813 presented a valuable memoir to the Medico-Chirurgical Society of London, *On the Effects of Evacuating the Aqueous Humour in Inflammation of the Eyes and some Diseases of the Cornea*. In the same year, publicity was given to this paper in the *Transactions of the Society* (vol. iv, p. 142).

Mr. Wardrop, omitting all mention of the observations of Whyte, states that he was led to enter on his special plan of treatment from an acquaintance with the curious phenomena noticed by Dr. Barclay in the dead eye; viz., that if the organ was moderately squeezed in the hand, or had its veins filled with quicksilver or water, the cornea became turbid, and, on relaxation of the pressure, gained its natural transparency.

Mr. Wardrop refers the great and immediate relief which his patients experienced to the sudden "removal of tension". This "tension" he considered might be referable in some cases to an increased quantity of blood in the eye, the aqueous humour being of normal quantity; while in others, he states, it was manifestly increased. Wardrop believed that the operation had a marked antiphlogistic effect; but he did not recommend the treatment as "the sole remedy, but only as a powerful auxiliary in some cases, and in others as a sure and perhaps only means of preventing the total destruction of the organ.* In an instance of progressive staphyloma attended with inflammation of the tunics, he observed that the latter was arrested by the paracentesis, and did not recur until the globe resumed its previous state of tension.

Carl Wedl has investigated the physiological effects of paracentesis of the cornea and sclerotica upon the circulation of the iris and choroid. In his *Pathological Histology* (Sydenham Society's Edition, p. 19), he states, "If the cornea of a white rabbit be punctured with a straight cataract needle, the transparent vessels of the iris, and the anterior ciliary vessels with the fine branches, visible only under a lens, become apparent after the escape of the aqueous humour. A reddish border is formed around the cornea. After death the vascular ramifications in the ciliary body and the iris are most beautifully displayed. If a puncture be made through the sclerotic into the vitreous humour, no stasis is observed in the ciliary vessels (processes?) until a portion of the vitreous humour has escaped. The quantity of vitreous humour that should be allowed to escape must be limited within certain bounds, otherwise minute extravasation of blood would appear to occur in the ciliary processes. Wedl refers these phenomena (congestion and extravasation) to a disturbance of the equable pressure which the humours of the eye exert on its internal circulation. After iridectomy performed for glaucoma, Gräfe has noticed "retinal ecchymoses"; they consist of extremely regular, round spots, which seem to be seated exclusively on the veins, and for the most part where the large trunks unite." (*Memoirs*, New Sydenham Society's Edition, p. 300.)

Continental surgeons appear to have appreciated more fully the value of Mr. Wardrop's practice in cases of ocular inflammation and congestion than his own countrymen. The French and Germans have not only boldly opened the cornea, but repeated the operation at short

intervals, occasionally several times in the twenty-four hours. Their results are reported as having been very satisfactory.

Some seventeen years after the publication of Wardrop's paper, Dr. Mackenzie suggested the propriety of practising paracentesis of the sclerotica for the relief of the tension of glaucoma. (*Glasgow Medical Journal*, Aug. 1830, p. 265.) Since then the several editions of his national work on *The Diseases of the Eye*, have contained similar advice.

Mr. Middlemore remarks, in his Jacksonian prize-essay, that he had noticed, after drawing off the turbid vitreous humour, it was replaced by a more transparent fluid, and the vision of the patient was improved. Mr. Middlemore must, I think, have abandoned the method almost immediately after the publication of his *Treatise on the Diseases of the Eye* (1835), or I should not have failed to have seen or heard of some of his cases.

Desmarres, in his *Traité des Maladies des Yeux* (1847), at page 773, gives an interesting and most instructive chapter on paracentesis of the eye. In acute glaucoma (*une violente ophthalmie interne*) supervening upon the depression of a cataract,* he plunges a Wenzel's cataract-knife (*couteau lanceolaire assez large*, pp. 586 and 597) into the outer and lower part of the globe, and at three millimètres† from the rim of the cornea. (Diagram c) Such an incision would divide the ciliary muscle at its choroid end, the ciliary processes, and the anterior of the retina. The length of the incision which he makes is about one-sixth of an inch, and the depth to which the knife penetrates about one-fourth. I have arrived at these figures by the measurement of a drawing which Dr. Desmarres has given of an instrument (Wilde's needle?) for the performance of sclerotic paracentesis (p. 774). If the inflammation do not yield to a single operation, Desmarres reopens the wound even to a fourth time, or, if need be, as often as active inflammatory symptoms reappear.

The effect is to give immediate relief to local pain, and to subdue an ophthalmia which had proved rebellious to the usual antiphlogistic treatment. These results Desmarres refers to the drawing off of the aqueous humour when highly saturated with lens-molecules, and its replacement by a normal secretion (p. 597). It is in this class of cases that we get a glaucomatous tension; and I have in my own practice witnessed the most satisfactory results from such a proceeding, after paracentesis of the cornea had failed to give relief. Dr. Hillier Blount, who formerly practised in this town, was a student in 1846 in Dr. Desmarres' clinic. On his return to England, he informed me what marvellous recoveries he had witnessed from plunging a cataract-knife into the eyeball behind the rim of the cornea, in the case of acute internal ophthalmia (acute glaucoma?), when supervening upon the operation of cataract reclinatio. In glaucoma, as defined by the older writers, Desmarres advises the same plan of relief which, he states, produces "beneficial arrests" in the progress of the disease. In a letter which I received from Mr. Hancock of London on May 17th, 1860, he mentions that the Parisian oculist continued to divide the ciliary structures, commencing his incision rather nearer to the transparent cornea ("division of the ciliary muscle"). He appears, however, to have since abandoned the plan for iridectomy. (See BRITISH MEDICAL JOURNAL, vol. 1862, p. 377.)

We have now arrived at the Iridectomy epoch. In 1855, Von Gräfe announced paracentesis of the cornea as a new remedy for glaucoma; and in 1857, the application of iridectomy‡ for the same purpose. He was

* I have italicised this last opinion, as it embodies even *ipsissimò* *verbis* the views of the Iridectomy School in 1860, *quoad* the beneficial effects derivable from either operation.

* The occurrence of glaucomatous pressure after needle operations for cataract, has been specially pointed out by Gräfe (*Memoirs*, Sydenham Society edition, p. 371.)

† A millimètre is about one twenty-fifth of an inch.

‡ Iridectomy is performed by making an incision half an inch

led to a trial of the latter from observing an improved circulation in the choroid, after its performance in cases where the pupil had been partially obstructed from the effects of an irido-choroiditis.

Mr. Dixon's experience has led him to the conclusion that some instances of acute glaucoma recover after a paracentesis of the cornea (Wardrop's operation)—a fact admitted by Gräfe; while others require, for permanent reduction of tension, a more compound operation, namely, the removal of a small bit of iris. (Holmes's *Surgery*, vol. ii, p. 855.)

Unhappily, a very large proportion of persons affected with glaucoma present the chronic or subacute variety of the disease. In such, let who may operate, the benefit in the greater number of cases is limited to a reduction of the intraocular pressure, and an extension of the lateral field of vision. The patient "does not see better, but in a different manner". As a rule, the sight endures during a longer period; but it is rare for the defining power to become more acute. In this class, the recurrence of an excess of tension, which may be quite independent of inflammation, is not infrequent, and may generally be completely overcome without a resort to a second or third iridectomy, as advised by Dr. Gräfe. Of the truth of this my own practice has afforded several examples. In some cases, in consequence of the advanced stage to which atrophy of the optic nerve has attained *before* surgical treatment was employed, or the increase *afterwards* of an effusion between the choroid and retina—states which may occur singly or combined—blindness creeps on, notwithstanding the intraocular pressure may be reduced to the normal standard.

I have seen the progress of idiopathic senile cataract complicated by a subacute glaucoma—a fact of the highest importance in regard to prognosis and treatment.

[To be continued.]

PRACTICAL OBSERVATIONS ON THE TREATMENT OF THE PURULENT OPHTHALMIA OF INFANTS.

By J. C. WORDSWORTH, F.R.C.S., Surgeon to the Royal London Ophthalmic Hospital; lately Assistant-Surgeon to the London Hospital; etc.

So many sad instances of the destructive tendency of purulent ophthalmia in the infant have lately come under my notice at the Royal London Ophthalmic Hospital, that I am induced to offer a few practical remarks on the treatment usually adopted in this disease.

My own experience leads me to the conclusion that no disease is more amenable to treatment than this form of purulent ophthalmia; and I hope that consequently some good is likely to be produced by calling the attention of the profession to this subject.

At this time, I have under treatment at the hospital several cases that aptly illustrate and enforce the importance of the plan traditionally adopted by us, from the days of Saunders, Travers, Lawrence, Tyrrell, etc. It is recorded by them that, in their hands, a disastrous result was almost unknown, if cases came early under their care; and I believe the present staff of the hospital would unhesitatingly endorse this dictum, and bear testimony to the efficiency of the plan of treatment almost always adopted there.

long just behind the corneo-sclerotic union, and then removing one-sixth of the iris close to its ciliary attachment. By this proceeding, the pupil is made to extend to the ciliary ring, the zonula and the lens alone (it is presumed) intervening between the vitreous and aqueous chambers.

It, therefore, follows that the cases to which I referred were either very inefficiently treated, or that the remedies used were not applied in time. One, now attending the hospital, is an example of that very uncommon condition technically termed xeroma—"dry conjunctiva" or "cuticular conjunctiva"; and so far as I can learn, seems to have been a case of purulent ophthalmia, in which a very caustic solution of nitrate of silver was frequently applied, and has produced such a change in the condition of the conjunctiva, and apparently also in that of the lacrimal gland, that no fluid is poured on its surface.

In some others, the cornea has been perforated by ulceration or sloughing, and closure of the pupil, or a worse condition, has followed. Here, again, I believe, the error has been on the side of too vigorous use of stimulants during the active condition of the disease. There can be no doubt that, when the affection is early recognised, and before the ocular conjunctiva is much involved, it may be cut short by the use of stimulating and astringent applications, as in analogous cases of disease of the mucous surfaces in other parts; but that, as soon as the case has made some progress and an acute condition of inflammation is established, which has produced some symptomatic fever, it is irrational to attempt its cure by the irritant plan, while the febrile condition continues. It seems probable that the case is considered of no importance very frequently, till it has passed its incipient stage, and the opportunity for ectrotic treatment is gone.

It cannot, therefore, be too much impressed how important is an early recognition of this dangerous malady—a disease that has been computed to produce at least half the cases of hopeless blindness that exist in this country.

The surgeon would do well always to give a guarded opinion when he is consulted about "a slight cold in the eye" of a newly-born infant, remembering that the disease often commences very slowly; and that, so long as it is confined to the palpebral conjunctiva and the caruncle, it may be safely and efficiently treated with almost infallible success; but that, if neglected, it will probably soon pass into a very dangerous and tedious affection.

It is absolutely impossible to say of a given case that has proceeded to destruction of the eye, that it had a stage when the abortive plan of treatment might have been put into practice; for sometimes the disease makes such rapid progress that there is reason to doubt that this opportunity ever occurred, or if so, it was of so short duration that it was impossible to take advantage of it. I have seen cases in which the lids were swollen and tense to such a degree, within a few hours after birth, that it was practically impossible to gain an accurate view of the condition of the cornea. Here it is manifestly idle to suppose that the adoption of any treatment would have stopped the disease at once. On the other hand, it is also impossible to declare that all cases, if neglected, will pass into the second stage.

For myself, I may state that I believe that the disease is often of so mild a character, that only injudicious treatment can make it dangerous, and that little is required to be done; that the disease would subside if left alone even, and is aggravated by officious and unnecessary interference. However this may be, it is the safest and the only proper course to adopt the mild preventive measures which so ample experience has ratified.

Suppose, then, a case of the disease, in which it is confined to redness of the conjunctiva, especially of the lower lid, the mucous membrane being somewhat villous and prominent, and attended by some discharge of mucus or pus, and tears. This is the first stage. How may such be best treated? I should be content to have the eyes bathed frequently with warm water, by means of a small piece of linen cloth, to wash away the dis-