

sary is to remove the affected tract; that the sclerotic performs an entirely passive part, and may safely be left. Now, it seems to me very doubtful if we are justified in thus looking upon the sclerotic as a mere packing-case. It undergoes changes in cyclitis and posterior staphyloma. The vessels that supply its ciliary zone come from common trunks with those which supply the ciliary body, and they are dilated from the same causes. Can we conclude that a chronic inflammation, whose chief characteristic is its tendency to spread along certain lines, attacking the anterior segment of the uveal tract, will never invade the tissues over it, or that, having done so, will subside when the starting-point is removed?

It is difficult to believe that the micro-organisms that have been found in the choroid, aqueous, and vitreous, of the exciting eye, may not also exist in the lymph-spaces around the dilated vessels of the sclerotic. It is true that in evisceration an attempt is made to render the cavity of the sclerotic aseptic; but everyone knows the difficulty of ensuring this when once septic inflammation has commenced. Can there be any doubt that, were septic inflammation to take place in the cavity of the sclerotic, it would be at least as liable to extend along the optic nerve and its sheaths as a similar inflammation of the vitreous or choroid?

There is, however, another point in which evisceration is inferior to enucleation, namely, that there must always be more doubt as to whether the process that eventually implicates the other eye has not already passed beyond the seat of operation. It may be thought that the few millimètres of the optic nerve removed in enucleation can afford no additional safeguard; but I think it quite probable that they do. We know that the inflammation of the uveal tract may very soon give rise to papillitis; but the experiments of Deutschmann and the clinical history of cases show that its progress along the nerve is very slow. In evisceration, the retina and papilla must be rudely torn from the lamina cribrosa, and some portion of inflamed tissue may easily be left. In enucleation, on the other hand, a clean section of the nerve is made a few millimètres behind the globe, and if the inflammation has not already extended beyond the point of section, the safety of the sound eye is ensured. How long it takes for the inflammation to extend beyond the usual point of section can only be gathered from cases in which sympathetic inflammation has occurred after the operation. This happened (*Clin. Soc. Trans.*, xliii, p. 207) in a case of Mr. Nettleship's, in which the interval between the injury and the operation was only ten days, and I believe that this is the shortest time on record.

It seems not improbable that sympathetic irritation might be caused by evisceration, the ciliary nerves being compressed by the contracting sclerotic, and the stump becoming tender.

As regards the cosmetic effect of simple evisceration I have no experience, but it is not easy to see why it should be superior to that of enucleation. It is, however, quite otherwise with Mules's operation of evisceration with the introduction of a glass sphere into the sclerotic. There can be no question in the mind of anyone who has performed the operation, or seen its results, of the excellency of the stump that is produced; not only are its movements free, but the natural prominence of the eye is preserved. Although, however, I readily admit the excellent result that Mules's operation gives, I think that its advocates have painted the results of enucleation in too sombre colours. A stump that will not carry a mobile and sufficiently prominent glass eye is certainly the exception, and if care were taken always to cut the muscles as long as possible, it would be still rarer. Still there can be no doubt that a better stump can be obtained, and obtained with more certainty, by Mules's operation than by enucleation. It has, moreover, an advantage over simple evisceration in that there is no cavity in which secretion can collect. It remains, therefore, for us to see if we cannot combine the safety of enucleation with the cosmetic effect of Mules's operation. The following is a suggestion having this object: that the globe should be enucleated in the usual way, that the four recti should then be held apart, and a glass sphere be introduced into Tenon's capsule, and the tendons, capsule, and conjunctiva be united over it.

I regret that at present I have only had the opportunity of performing this operation once, and that the proposal is therefore at present merely a suggestion, the value of which must be decided by future experience. The case on which I operated was one of rupture of the globe of three weeks' standing. The conjunctiva having been divided in the usual way, each rectus in succession was seized with forceps, divided, and secured by a ligature passed through it and the conjunctiva; the enucleation was then completed, and the four recti being held apart by means of the sutures, Mules's sphere was introduced into the capsule of Tenon without any difficulty; opposite recti, with the conjunctiva, were then united across it by passing one of

the ligatures through the opposite tendon, the other ligature being then removed. This method of suturing was certainly defective; a single suture for each pair of muscles is insufficient, and it would probably be better to suture the muscles first with catgut, and then to unite the conjunctiva separately. The sutures cut out on the fourth day, and the globe, which was exposed, was then removed. The reaction was considerable, but not greater than usually occurs after a Mules's operation.

Should subsequent experience prove this operation to be feasible, it will possess the advantage over evisceration of not spoiling the eye as a specimen. If all lost eyes are to be reduced to a pulp and removed piecemeal, our pathological knowledge will be at a standstill.

How the mobility of the stump after this operation will compare with that left by a Mules's remains to be seen. The recent researches of M. Motais (*Arch. d' Oph.*, 1886, p. 157) have shown that the globe does not rotate so freely in the capsule as was at one time supposed, but that with every movement of the eyeball there is a considerable movement of the capsule; indeed, this is evident from the fact that in performing enucleation we not unfrequently find extensive adhesions between the globe and capsule, although there had existed no obvious impairment of movement.

In considering this part of the subject we must distinguish the movements of the stump from those of the artificial eye that it supports. After Mules's operation the movements of the stump are as free as those of the normal eye, but the movements of the artificial eye, although free within certain limits, are more limited. This must be so, for the artificial eye rests upon, instead of beneath, the conjunctiva, hence its movement in any direction is checked by its edge being driven into the conjunctival *cui-de-sac*. The free mobility of the stump left by Mules's operation, so far therefore from being an unmixed good, may possibly be hurtful, by causing friction between the stump and the glass eye; at any rate, there can be no harm in making the movements of the stump and eye co-extensive.

*Conclusions.*—1. That enucleation is safer than either simple evisceration or Mules's operation in respect of the sound eye and probably also of the life of the patient. 2. That in respect of the latter it can be rendered still safer by taking antiseptic precautions and ensuring free drainage from the orbit. 3. That by Mules's operation a good stump may be obtained with certainty, while in enucleation it is occasionally defective. 4. That by combining enucleation with the introduction of a glass sphere into Tenon's capsule, it is probable that we shall obtain the safety of the one operation with the cosmetic effect of the other.

## THE OPERATIVE TREATMENT OF TRICHIASIS WITH OR WITHOUT ENTROPION,

AND A SHORT NOTE ON ARGYLL ROBERTSON'S OPERATION FOR ENTROPION.

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It is not my purpose to review the whole subject of palpebral surgery, but briefly to comment upon two of those methods of operating more recently introduced, which have been practised with such success at St. Mark's Ophthalmic Hospital, and elsewhere. I am induced to do so by the fact that although neither of them can now be regarded as novelties, they are not yet as universally known and practised as, I think, they deserve. As my experience of them enlarges, so also does my faith in their efficacy in rendering permanent relief to a class of cases hitherto most difficult to deal with, and the opprobrium of ophthalmic surgery. It is, however, only by discussions, such as I anticipate to-day, that the real value of any mode of procedure can be ascertained, and a collective experience acquired. The experience of one is seldom the experience of all.

In 1882, when this Association met at Worcester, I read a paper on what I then thought was a novel method of dealing with partial trichiasis; namely, by electrolysis. I then wrote from a comparatively small experience of the method, but expressed a belief that it would rapidly supersede all the other operations in use to procure permanent destruction of the hair follicle and its aberrant cilium in a certain limited class of cases. Since then I have had large opportunities of judging of its effects, and have operated on many hundreds of cilia, and yet have nothing to take from my former statements regarding its superiority. I have also had letters from some of those who have tried it with satisfaction. Moreover, Dr. Michel, of Missouri, who, unknown to me, had practised electrolysis in these cases for

some years, has favoured me with a pamphlet in which the same convictions are expressed.

The following is the method I now adopt in treating those cases of partial trichiasis where, without marked entropion, a few cilia grow from abnormal positions in the free border of the lid, and rub on the cornea. A continuous current battery (Leclanché) of 10 or 15 cells, is placed close to the patient; an electrolysis needle (I often use a common sewing needle) is attached to the negative pole (zinc) and a pad or sponge to the positive electrode. The needle is then inserted into the lid border, along the course of the cilium to be destroyed, to a depth of about four or five millimètres. The circuit is completed by making contact with the pad on the skin of the brow, cheek, or temple close by. Dr. Michel makes the patient hold the pad in his hand, and close the current at will. Hydrogen is developed by decomposition of the watery elements of the follicle, etc., and is given off around the needle, as evidenced by the formation of a white ring of bubbles. A few seconds' application, if the battery is working well, suffices to produce this effect, and the hair is then wiped away, bringing with it a small mass of dead tissue. If the hair does not quite readily come away, it is better to reapply the needle and destroy the bulb more thoroughly. Each cilium must thus be destroyed. The operation is decidedly painful, and this is its one fault. In some cases it may even be advisable to give an anæsthetic, where many hairs have to be so treated. It is obvious that this method of destroying hairs is equally applicable to other parts of the body as to the lids, a fact pointed out in my former communications on this subject.

I need not recapitulate the favourable comparison that suggests itself between this and the actual or potential cautery, illaqueatio, or Gaillard's and Herzenstein's sutures.

When the ingrowing cilia are very numerous, or where there is some entropion associated with the trichiasis, some plastic operation is required to transplant the whole set of cilia away from their faulty position into a more innocuous one. Spencer Watson's ingenious method of transposition of the cilia was, though itself short-lived, the parent of a long series of modifications, the last of which is the only one concerning which I wish to speak.

Spencer Watson, Nicati, Gayet, Warlomont, Story, and Dianoux, all in their various ways, transposed the cilia with a flap of palpebral skin. The disadvantages of this soon became apparent in those cases where the transplanted flap touched the cornea; and as such constituted a large section of the total, these all readily gave way to Van Millingen's suggestion of transplanting mucous membrane to the lid border. At first rabbit's conjunctiva was used, and subsequently buccal mucous membrane (Story), which best fulfils the indications.

The operation, as I now do it, is as follows: Knapp's clamp is inserted, and the lid firmly squeezed, the ciliary border being everted as far as possible. An incision is then made through the free border of the lid for its whole length, and about six millimètres deep, so placed that all the cilia are in the anterior or skin division of the lid, and no hairs or roots in the posterior or conjunctival division. If any such are seen in the posterior flap they are to be carefully removed. A second clamp similar to the one used on the eyelid is then applied to the lip, upper or lower, according to circumstances. When screwed tightly up so as to prevent bleeding, two parallel incisions are made through the mucous membrane, equal in length to the incision in the lid, and varying in distance apart from three to five millimètres, according to the amount of displacement in the cilia to be corrected.

The strip of mucous membrane so made is dissected off with scissors, and any loose fat removed from its under surface. It is then as rapidly as possible transferred into the slit left in the eyelid, and fixed in that position by three sutures, one at either end and one in the middle. The operation so far is almost bloodless. The clamp is then, and not till then, removed from the eyelid; considerable hæmorrhage follows for a few minutes, which, however, does not seem in any way to risk the subsequent life of the transplanted mucous membrane which, in twenty-four hours, is in most cases adherent to, and in vital union with, the tissue of the lid.

The lip-clamp is then removed, and the patient dismissed with some iodoform ointment and a wet compress of boric acid solution applied to the eyelid. No dressing is put on the lip, which heals readily and almost painlessly. The result is, in a large proportion of cases, very satisfactory. The faulty cilia are mechanically bossed out from contact with the cornea by the buccal mucous membrane transplanted, and thus a new and broad free border is formed to the eyelid, whilst the hairs, restored to a harmless position, serve their useful and ornamental purposes as well as ever. Moreover, the effect is permanent, though undoubtedly a certain amount of shrinking of the flap occurs after some time. I shall not attempt to make a comparison

of this operation with those that preceded it, a comparison easily made, and wholly in favour of this.

#### ARGYLL ROBERTSON'S OPERATION.

Ectropion has been, and is still, one of the most difficult of all the deformities of the eyelids to treat successfully; and yet, owing to the great disfigurement produced by it, as well as the annoyance it causes in other ways, it is one urgently calling for treatment.

Argyll Robertson, in 1883, published his account of "A New Operation for Ectropion;" his experience of it, at that time, only extended to five eyelids, in two of which he could not state the result. As the operation seems to be one of real value, and as so few cases have since been published, I think it may not be out of place to mention those I have done or assisted at, and also to describe certain modifications in the method which I have found useful.

The operation is usually performed as follows: A suture with two needles; a piece of sheet lead, one inch long and a quarter of an inch broad, curved to suit the shape of the globe; and a piece of medium thin india-rubber drainage-tube, are required. The needles are passed through the border of the lid from skin to conjunctiva, and out again through the inferior conjunctival *cul-de-sac* to the skin, an inch or so below the margin of the lid. The punctures near the lid-border are about half an inch apart, and the counter-punctures below about a quarter of an inch apart. The piece of lead is then slipped under the two threads inside the lid, between them and the palpebral conjunctiva, and the drainage-tube is passed under the external loop of suture near the margin of the cornea. The suture is then drawn tight, and tied over the lower end of the piece of drainage-tube. As the suture is tightened, the border of the lid is bent inwards over the edge of the leaden plate, and the elasticity of the drainage-tube keeps up a constantly applied pressure for from five to ten days. When the apparatus is removed the lid is found to have recovered its normal position, either wholly or in great part.

Where the eversion is extensive, occupying nearly the whole margin of the lid, I have obtained good results by applying a double apparatus, that is, two sets of sutures and two pieces of drainage-tube over the one piece of lead. By this means a more complete command is obtained over the eyelid, and the pressure, being more evenly distributed, need not be excessive on any one point.

In the earlier operations I experienced considerable difficulty in keeping the sheet of lead in its place beneath the sutures. Dr. A. S. Patton, the house-surgeon at St. Mark's Hospital, suggested making holes in the lead near its inferior margin. Through these the sutures are passed from within outwards, before being carried through the inferior *cul-de-sac* of the conjunctiva. The lead is thus kept in perfect position, and the *technique* of the operation simplified without any corresponding disadvantage. In most cases I have found it necessary to tighten the sutures from time to time, as the lid moulded itself to the lead; this was effected by lifting the loop of suture near the margin of the lid with a strabismus-hook, and passing small rolls of cotton wool under it.

The following are brief notes of the cases done at Saint Mark's Ophthalmic Hospital during the past two years.

CASE I.—Mary E., aged 40 (No. 39), suffering from chronic lippitudo, with everted lower eyelids. The canaliculi were slit, and three days later (April 30th, 1884), I performed Argyll Robertson's operation on the left eyelid, the double suture being used. Result, "most satisfactory."

CASE II.—The same patient had her right eyelid similarly operated on by Dr. Keane, our then house-surgeon (May 7th, 1884), with a like satisfactory result, the lids in each case being "almost quite restored to their normal position."

In the first of these cases, the india-rubber tube was cut short near the sutures, the result being that the sharp corner of the cut tube pressed upon and ulcerated the skin in its neighbourhood, causing much unnecessary pain. I now always have the tube long enough to rest against the brow above, and the cheek an inch below the inferior suture.

CASE III.—James D., aged 70 (No. 80), had senile cataract and ectropion on each side. I did Argyll Robertson's operation on his right lower eyelid, resulting in a "complete cure of the deformity;" and, on June 3rd, 1885,

CASE IV.—I did the same on his left eye. The sutures were left in for five days; after which the patient returned home with the lids "in perfect position." The interval of time between the two operations was not noted.

CASE V.—Edward T., aged 23 (No. 195), suffering from ectropion, right and left, with great thickening of the everted conjunctiva, which was constantly caked with dry discharge. On July 25th, 1885, I did

Argyll Robertson's operation on the right eye. After six days, the sutures were removed, but the lead was forgotten in the conjunctival sac for nine days longer.

CASE VI.—On August 6th, 1885, Dr. Story did a similar operation on the same patient's left eye; the sutures were removed after four days. Portions of both eyelids were noted as being in "fairly good position" some time after the operations; but, owing to the great thickening of the conjunctiva, a perfect result was not to be expected.

CASES VII and VIII.—Robert G., aged 50 (No. 319), was admitted August 19th, 1885. Argyll Robertson's operation was done on each side by Dr. Story. The result was "not satisfactory," though there was some improvement. The lead, after the operation, was very liable to slip out of its place, and so it got hardly a fair chance.

CASE IX.—On October 3rd, 1885, the operation was repeated on the left eye. It was followed by considerable swelling of the lid and pain, so that the suture had to be removed after three days. It was then found that the lid had sloughed through its whole thickness from the pressure of the india-rubber tubing. When the raw surfaces became healthy, their edges were pared, and brought together with sutures—thus making a modified Adams's operation of it, with quite excellent result, the lid being in position, and very slight deformity resulting from the scar.

CASE X.—Patrick M. (No. 32), ectropion of the left lower eyelid. On October 10th, 1885, Dr. O'Devaine did Argyll Robertson's operation, adopting Dr. Patton's modification of the holes in the lead. The sutures were removed after four days, and the result was noted as "most satisfactory." This patient was again seen on July 26th, 1886, that is, nine months after the operation, and the lid was still in perfect position.

CASE XI.—J. M., aged 40 (No. 116). Ectropion of both lower eyelids. On June 12th, 1886, Dr. Story did Argyll Robertson's operation (Patton's modification) on one eyelid. The sutures were removed after seven days. The result noted was only a very partial success. In this case the point of exit for the lower sutures was not as low down on the cheek as usual.

CASE XII.—J. H., aged 22 (No. 42). Ectropion from chronic marginal blepharitis. The canaliculi were first slit, being wholly everted. This did not relieve him, so on June 9th, 1886, I did Argyll Robertson's operation (Patton's modification) on his left eye. The apparatus was removed after three days, with an entirely negative result.

CASE XIII.—On June 19th, 1886, I did the same operation on his right eye. The sutures were left in for ten days, and frequently tightened by inserting rolls of cotton-wool under them. The result, after an interval of six weeks, was "considerable improvement."

CASE XIV.—On July 7th I did the same operation on the left eye again. The sutures were left in for ten days, and frequently tightened in the same manner. The result noted was "perfect."

Notes.—1. Where the whole length of the lid-border is everted, it may be advisable to use the double-suture arrangement (Case I).

2. Where only a small portion of the lid-border is everted, a smaller piece of lead, with Patton's holes, remains in perfect position, and effects a cure with less annoyance to the patient (Cases XII, XIV).

3. Where only slight swelling of the lid follows, and rapidly subsides, subsequent tightening of the sutures is necessary (Cases XII, XIII, XIV).

4. The final result is not obtained for some weeks after the apparatus is removed. The swelling of the conjunctiva at first diminishes the result, and subsequently cicatrisation of the conjunctiva increases the permanent inversion.

5. A repetition of the operation in some cases effects a cure.

6. In one case a small abscess formed in the line of the inferior sutures.

7. In one case the lid sloughed through its whole thickness.

Abstract of the Fourteen Operations recorded in the Paper.—In four, the result was "perfect;" in five, "considerable improvement" was noted; in three, "slight improvement" was recorded; in one, the result was "negative."

SUNDERLAND is to have a new hospital for infectious diseases, the building of which will cost £14,796. The site has cost £5,000.

THE Manchester county magistrates have made an order putting in force the "Dogs Act" for three months in the districts of Stretford, Urmston, Flixton, and Barton-on-Irwell.

A CENTENARIAN.—The hundredth birthday of Mrs. Ann English was celebrated at Sheffield by about sixty old women, whose ages ranged from 65 to nearly 100.

UNIVERSITY COLLEGE.—The Fellowes Clinical Gold Medal has been awarded to Mr. C. W. Jecks, and the Fellowes Clinical Silver Medal to Messrs. H. P. Dean, G. R. Murray, and W. B. Ransom.

## STIFFNESS OF THE GREAT TOE JOINT IN MALE ADOLESCENTS.

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THIS condition, respecting which Dr. Reginald Lucy asks for information in the JOURNAL of April 2nd, is one of considerable interest, and may, I think, be very usefully discussed, for though it is by no means rare, though its pathology is obscure, and though its successful treatment is often difficult, I am not aware that any full account has ever been written of it. As I chance to have the following notes of cases by me, they may, perhaps, serve as a contribution to the subject. All the cases I have met with, now upwards of twenty in number, have been so much alike in their clinical features, that it is unnecessary to multiply instances; two examples will be enough.

CASE I.—A lad, aged 16, who came to St. Bartholomew's Hospital, said that, two years before, he had first observed that towards the end of the day his right great toe had become stiff and painful. These symptoms had slowly increased, and he was now always in suffering. He pointed to the metatarso-phalangeal joint as the seat of the trouble. This joint was slightly enlarged in consequence of expansion of the articular end of the metatarsal bone, and, to a somewhat less marked degree, of the base of the phalanx. There was no thickening of the synovial membrane. The toe itself was quite straight, but it was set on to the metatarsal bone in such a way, that from the metatarsal joint to its end it took a rather downward direction. This was the constant position of the toe, the patient being unable either to raise or depress it, even with the strongest effort he could use. On trying to extend it in the ordinary manner in taking a step forward, he felt severe pain, and, to avoid this, he habitually walked "whole-footed." He was unable even to commence the act of standing on tiptoe. The joint, when I examined it, was quite cool, but he said that at night it often felt hot, and was found to be so when the fingers were placed on it. This was always the case if he had been walking on it for any distance. On testing its movements, I found the metatarso-phalangeal joint almost rigid against extension, though it admitted of some degree of flexion. The patient said he had never had rheumatism, nor was there any history of it or of gout in his family.

CASE II.—A gentleman, aged 23, stated that his right great toe had first troubled him eight years before (that is when he was 15). The condition of the toe was similar to that described in the last case. The articular ends of the metatarsal bone and the first phalanx were distinctly enlarged, and their margins were heaped up and nodular; the joint was so stiff that, while it could not be moved at all by the patient, I could carry it through only a few degrees of flexion; and extension was more limited than flexion. The toe itself was quite straight, but, as in the previous case, its distal end was slightly pointed downwards. The joint was now normally cool, but the patient said that after walking it became hot, as well as painful and swollen. He had wished to enter the army, but as his gait was awkward, and "whole-footed" on this side, and as he could not walk more than half a mile without pain and increasing lameness, he had been compelled to relinquish the idea. In the eight years during which the affection had lasted, many forms of treatment had been employed. He had rested the toe for some months, walking as little as possible, and always on his heel, so that the toe did not reach the ground; the joint had been freely painted with iodine, and at another period freely and repeatedly blistered. It had also on two occasions been forcibly moved when he was under the influence of gas. Nothing, however, had done any material good. Just before I saw him he had been advised to submit to excision of the joint, or amputation of the toe, a course he was himself inclined to take, for he was unable, in the present condition of the toe, to follow any occupation with anything like comfort. I found that both his parents suffered from osteo-arthritis, that he himself had had two attacks of acute rheumatism, that his knuckles were markedly enlarged, and that he often had fugitive pains in his knees, shoulders, and other joints.

The cases in the group of which the two just related may be taken as representative present a close resemblance to each other. All have occurred in male patients between the ages of 12 and 25; in all the affection has been seated in the metatarso-phalangeal joint of the great toe. Twice I have met with it attacking both great toes in the same patient. The condition in all the cases presented the characters of a slowly advancing, sub-acute inflammation, attended with almost complete stiffness of the toe. The joint is usually free from any marked