and continuously retained, it will almost always disappear—generally very quickly—unless some persistent cause favouring its descent, such as phimosia, obstinate cough, as in whooping-cough, calculus, etc., be allowed to persist. This is certainly borne out by those of the 60 cases which I have been able to follow up, and, excluding those who were first trussed later than three months ago, out of 21 answers I have received, in 19 the rupture is reported as never coming down now.

There are certain points of detail in which my own experience is not quite in accord with Mr. Lund's, and to which it may be worth while drawing attention. First, a good deal depends upon the kind of wool, or rather of worsted, employed—for, although the two words are often used indifferently, wool and worsted are not the same things, the latter having a much greater twist. Real Berlin wool I have found not to wear well; it does well enough when new, but spoils in one or two washings. "Alloa yarn" or "five-ply fingering" (Peacock brand), on the other hand, are improved for the purpose of these trusses by washing, and they are not too harsh for the skin of any except the tenderest infant, in whose case a skein of "lambs'-wool" does best.

Nothing except wool or worsted seems to act as an efficient truss when applied in the same way; this is due, no doubt, to the elasticity of the animal fibres, which is distinct, although limited. In some cases in which the ruptures were large, and occurred in children between 3 and 5 years of age, I have found it useful to increase the elasticity by using, instead of the simple skein, a loop of the same material loosely knitted, or crocheted into a flat band about two inches wide, and applied in the same fashion.

I doubt whether a skein of twenty threads only, as Mr. Lund advises, will be found thick enough, except for very small infants, and I have sometimes found it necessary to use as much as double that number. It must be clearly understood that no pad of any sort is to be worn underneath the loop. Nurses often make this mistake; indeed, as to the whole method, some little patience will be called for in order to secure that it shall be carried out intelligently, or disappointment will surely ensue. But this patience will not be thrown away if the end is gained of saving mothers from the endless worry and expense which a ruptured infant so frequently entails upon them; and if I seem to have been needlessly particular as to details, it is because I am convinced of the value of this old-fashioned treatment, and am anxious that it should not get discredit from lack of fulness of description.

WHAT IS THE BEST METHOD OF DEALING WITH A LOST EYE?

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UNTIL recently it was not questioned that enucleation was the proper treatment for an eye that had lost all useful vision, and was in a state capable of giving rise to sympathetic inflammation. But although there was uniformity of theory there was much diversity of practice, for in a given case there was always a doubt whether sympathetic inflammation would really occur, eyes which had appeared almost certain to cause it having not unfrequently been known to remain innocuous during the patient's whole life. Hence, when the probability of sympathetic mischief occurring seemed remote, many a surgeon hesitated to urge the excision of an eye which was not unsightly, although, on theoretical grounds, he would have found it difficult to have excused himself from so doing. This, added to the natural disinclination of patients to submit to an operation, has led to the loss by sympathetic inflammation of an immense number of eyes that might have been saved.

It is true that a well-fitting glass eye upon a good stump causes so little deformity that it is seldom noticed by the ordinary observer. Unfortunately all glass eyes do not fit well and all stumps are not good, and an eye that is immobile, turned in a different direction to its fellow, and sunken, gives to its wearer a somewhat sinister appearance, and altogether debars him from certain walks in life. Another accusation that has been brought against enucleation is that it may cause meningitis. In these circumstances any substitute for the operation which, while ensuring the safety of the sound eye, would neither cause disfigurement nor endanger life, was sure to be warmly welcomed.

As regards meningitis following enucleation, the complication is so exceedingly rare (probably it does not occur more than three times

in 1,000 operations), that it may be doubted whether any major operation upon a part in such close relation to the cerebral meninges would be more free from the risk. Evisceration was, however, proposed by Alf. Graefe chiefly with the view of diminishing or abolishing the risk of meningitis, two cases of which had occurred in his own practice. His contention is that since none of the channels of communication between the eye and the brain are opened in evisceration, the risk of meningitis occurring is much lessened or entirely removed, a view that is supported by Wecker and others.

Now, in the first place, it is by no means certain what are the channels by which inflammation extends to the meninges. In the second place, a fatal meningitis has been set up by intraocular suppuration following a simple needling of opaque capsule. Out of twenty *post-mortem* examinations upon cases of meningitis after enucleation, in nine the most careful search, including in several a careful microscopical examination of the optic nerve, failed to discover any evidence of inflammation in the contents of the orbit external to the globe. In one there was orbital cellulitis, in two the optic nerve was affected, and probably also in two others. In one the inflammation was traced along the sixth nerve to the cavernous sinus. In the remaining five the record is imperfect (Nettleship, *Trans. Oph. Society*, vi, p. 445; Deutschmann, *Arch. f. Oph.*, xxxi, iv, 251). In most of the cases there was phlebitis of the cerebral sinuses, and in the majority the meningitis, which was of a purulent character, was marked at the convexity as at the base.

The path by which we should expect the inflammation to reach the brain would surely be the veins, and this might occur without any change being discoverable in their walls. The optic nerve and its sheaths, from their intimate connection with the meninges, would also seem to be a likely channel, but from what we know of sympathetic inflammation we should expect the progress of the inflammation along this path to be very slow, and the meningitis to be confined to, or most intense at, the base, whereas in the majority of cases the first symptoms of meningitis usually appear within forty-eight hours and the convexity is nearly as frequently affected as the base. Recent experiments, moreover, have shown (Gifford Knapp's *Arch. of Ophth.*, June, 1886), that the course of the lymph-stream in the nerve-sheath is towards the eye, hence, although by means of cell-proliferation inflammation might travel in opposition to the sluggish lymph-stream, as probably occurs in sympathetic inflammation, yet rapid absorption could hardly take place.

It is difficult to see what right the supporters of evisceration have to claim that the veins are not implicated. Surely septic absorption could take place from the interior of the sclerotic through the open mouths of the trunks formed by the union of the venæ vorticosæ at least as easily as by the veins of Tenon's capsule, which are imbedded in soft tissues. Indeed, if septic inflammation should occur, the risks in evisceration must be much greater, for its products are confined in a closed cavity, whereas, after enucleation, free drainage and irrigation can be procured. That this is a matter of no little importance is shown by a case recorded by Mr. Priestley Smith, in which well-marked symptoms of meningitis followed enucleation (*Oph. Rev.*, iv, 40), but subsided upon the orbit being thoroughly syringed out with an antiseptic solution.

It is true that in evisceration the optic nerve and the sheaths are not directly implicated, but it has long been known that the suprachoroidal space communicates freely with the latter, and Deutschmann's experiments upon the production of sympathetic inflammation have shown that substances introduced into the interior of the globe may travel along the nerve-sheath; how much much more likely would this be to occur if optic papilla had been forcibly dragged or scraped from the lamina cribrosa, as is the case in evisceration.

Bearing in mind, however, the fact that changes have been found in the nerve or sheaths in only a very small proportion of the cases of meningitis, and that when such changes occur in the early stages of sympathetic inflammation meningitis is an exceedingly rare complication in man (although it is frequent in experimenting on rabbits), we are justified in concluding that, as a rule, meningitis after enucleation is not due to extension along the optic nerve, but to some other cause, probably venous absorption, and this is as likely to occur after evisceration as after enucleation.

The occurrence of meningitis is, however, in the minds of most of us such a remote possibility that the choice between evisceration and enucleation would probably in any case really depend upon the immunity they respectively confer upon the sound eye, and the kind of stump left by each.

As regards the first point, the eviscerators say that, since the cause of sympathetic ophthalmitis is an inflammation of the uveal tract, travelling to the other eye by continuity of tissue, all that is neces-

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.*, xlii, 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. Motaïs (*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 *cul-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
ECTROPION.

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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