system it produced its effect, it is, with our present knowledge, impossible to say, any more than it is possible for us to explain the remarkable action of strychnine or of prussic acid; and, perhaps, for practical purposes, the sort of suspicion we have that in some way it poisons the blood, is sufficiently near the truth. The consideration of the whole subject leads to the conclusions that, if wounds are effectively drained of the first acrid discharge, there will be no blood-poisoning; and if a wound be kept sweet and clean, there ought to be no local poisoning, such as erysipelas.

But if these affections can be prevented, may they not also be generated by the treatment of a wound? It is an experiment which we cannot try; and yet, with a wound extending no deeper than would be required for the removal of a small sebaceous cyst—say from some part of the trunk—you can, if you closely follow the treatment, sometimes see the beginning of these troubles, which, if unchecked, would rapidly develop their proportions. This wound is closed for the purpose of obtaining union by the first intention; as you watch its progress, if all go well, some fluid oozes from it, and repair goes on; but, in most cases, this fluid, held in by the closure of the edges of the wound, does not so escape (unless drainage is provided); and we are so accustomed to look for this in the few cases in which drainage has been omitted, that, five or six hours after the operation, we pass a fine probe between the edges at some part of the wound to give exit to this fluid, a drop or two of blood-stained serum as it appears; if this detail be not attended to, the patient becomes restless, his pulse and temperature rise, and he is ill out of all proportion to the apparently trifling nature of the trouble; then the parts around the wound become swollen and red, and in this condition, if the discharge decomposes, diffused inflammation supervenes. In fact, he has suffered blood-poisoning in, perhaps, the least degree, and he has been placed in a condition fostering the occurrence of local troubles.

In all cases of blood-poisoning, it seems to me that the poison which acts upon a man's system is usually the direct product of that system; but I have also no doubt that a foreign discharge is, at least, equally virulent; and, further, that decomposing discharge will cause local irritation; but as, in the case of changes after death, it is the fluid of the first few hours, not the decomposing fluid of a later period, which causes the most fatal poisoning, so, during life, the decomposing discharge from a wound is less dangerous than is that which should drain off during the first few hours, and before decomposition of it has occurred. Thus we come to regard the free drainage of wounds as of primary importance.

In conclusion, let me repeat that, by strict attention to the rules of surgery, every recognised operation, if its performance be thought desirable or justifiable, can with perfect safety be practised so far as the avoidance of blood-poisoning is concerned; and that injuries may be healed without risk to life which, without such strict attention, would be irremediable, or would have to be treated by amputation.

WARWICKSHIRE.—In his first report on the sanitary condition of the combined districts of Stratford-on-Avon, Alcester, and Evesham, Mr. G. H. Fosbrooke, the medical officer of health, gives a general description of the sanitary circumstances prevailing in the area under his control. As in so many country districts, the water-supply is derived from wells sunk in a soil liable to pollution, and enteric fever has been the consequence. The absence of proper means of drainage is but too common, and hence, as regards the more rural and isolated spots, the sanitary authorities are recommended to adopt the tank invented by Mr. Rogers Field, which receives the slop-water of each house where it is in use, and subsequently utilises it by passing it through the subsoil prior to its being allowed to enter common land drain-pipes. The midden-privy, with all its attendant sources of nuisance and injury to health, is, as in most country districts, the usual means of excrement disposal, and all the evils associated with its use are pointed out in the report. Some few subclosets have been provided, and it is stated that difficulties are scarcely ever experienced with regard to their periodical cleansing, because the manure they contain is so highly valued. There are as yet no means in this district for preventing the spread of infectious diseases by means of isolation, except such as have been provided by the guardians for paupers. The necessity for such provision is great; for there is so large a proportion of the population who, though quite removed above the pauper class, and whom it would clearly be wrong to pauperise, because they happen to be unfortunate to contract some zymotic infectious disease, are quite unable to find efficient means of isolation, unless it be provided by the sanitary authorities. This question gains importance year by year, and we hope that before long every such authority will by itself, or by combination with its neighbours, make this provision, which is so essential in any efforts made for preventing the spread of infectious disease.

SECTION OF THE CORNEA IN CERTAIN DISEASES OF THE EYE OF INFLAMMATORY ORIGIN:

ABSCESS OF THE CORNEA: OPTHALMITIS: IRIDO-CHOROIDITIS SYMPATHETIC (?): WITH A NOTE ON THE TREATMENT OF HYPOPION BY CILIARY INCISION.*

By J. VOSE SOLOMON, F.R.C.S.,

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SOME years since, the late Mr. Guthrie, senior, advised the treatment of large collections of pus in the anterior chamber by a vertical and central incision extending from one side of the cornea to the other, and that a Beer's cataract-knife should be used for the operation. Soon after reading his paper, which was, I believe, about twenty years ago, I tried the plan in a single instance, but was not satisfied with the result; the failure, I am now persuaded, was due to the greatly disorganised state of the eyeball—in fact, to the operation having been too long deferred.

For the last thirteen years it has been my practice to evacuate extensive collections of pus or puro-lymph occurring in persons of feeble constitutional power, and in whom some layers of the cornea had sloughed, or evinced a tendency thereto, by making a radiating incision through the corneo-scleral union and the ciliary sclerotic for a distance of about two lines. There is no method with which I am acquainted more safe or effective; and it has the additional advantage of depleting the engorged ciliary choroid. It was the observation in colliers and labourers who had passed their fortieth year, that a peripheral semilunar corneal incision was commonly followed by destruction of the membrane and staphyloma, that led me to confine my puncture almost exclusively to the sclerotic. My colleagues Mr. Bracey and Mr. Owen, who, from having been formerly house-surgeons of our hospital, have had peculiarly favourable opportunities of judging, and of comparing this method with others, follow the same practice, and are well satisfied with its results.

In the course of 1873 and 1874, I treated successfully by Guthrie's operation (vertical incision), with some limitation as to the length of the wound, several cases of extensive *hypopyon* complicated by abscess, or by diffuse infiltration of the cornea; conditions which were sometimes coexistent in the same eye. The tendency of the infiltration to extend into the adjacent healthy tissue was not always at once checked; consequently, superficial scarifications, punctures, and even a second deep and rather free incision, made at an angle the line of the first wound, were employed with advantage, by giving early and facile exit to the pent up purulent material. In all cases of hypopyon, it is superfluous to say that all preventable causes of debility, as, for instance, over-suckling, should as a matter of course be removed.

In the administration of quinine I generally prefer to give half or a whole grain every hour to a large dose at intervals of four hours; in this way, I believe, the occurrence of suppuration in an organ may be sometimes lessened in extent, if not averted.

Whatever operation is performed, the warm water pad proves for the first few days a valuable local application. Drops of atropine and nitrate of silver are also useful where the local reparative power is defective.

The good effects of treatment by vertical incision may be summarised as—relief from pain, which is *not* always immediate; the preservation of a more perfect curve of the cornea than where the membrane has suffered ulcerative perforation, and consequently a less degree of astigmatism; frequently the prevention of synechia anterior, and staphyloma; also a less extent of any leucoma which may follow the presence of an onyx.

I now come to the chief and almost sole object of making this communication to the Association, namely, the *application of free section of the cornea to cases of deep seated ophthalmia threatening destruction of the eye*. I am indebted to our intelligent house-surgeon Mr. Eales for many of the notes of the two following suggestive and instructive cases.

CASE I.—A little girl, aged 12 months, was admitted under my care at the Birmingham Eye Hospital, on August 20th, 1874, with acute photophobia and muco-purulent conjunctivitis of the right eye; the cornea was throughout densely opaque. The child, always delicate, had suffered from diarrhoea for three weeks immediately prior to the appearance of the ophthalmia. On the ninth day of admission, the conjunctival discharge had ceased, but protophobia, with severe pain, which had deprived the child of rest and sleep from the time of admis-

* Read before the Surgical Section at the Annual Meeting of the British Medical Association in Edinburgh, August 1875.

sion, continued. At this time, an examination made under chloroform revealed great congestion of the conjunctiva and sclerotic, especially in the ciliary region; the cornea was so gorged with lymph that no iris was visible. A little above the transverse diameter were noted two small rough eminences consisting of lymph, probably points from which pus had escaped. Tension +1. The aspect of the eye was most unfavourable. While examining it, the possible usefulness of a free incision of the cornea as a preventive of sloughing of the part and a relief to the tension suggested itself, and at once I carried the idea into effect; making the wound not vertically but somewhat horizontally through the more dense part of the corneal infiltration, and on a level with the upper border of the pupil. The relief was rapid; sleep at once returned, and the day restlessness ceased. The whole periphery of the cornea began to clear. On September 15th, the twenty-sixth day of treatment, the patient returned home to Evesham.

On November 23rd, Mr. Eales made the following notes. "The iris can be plainly seen all round, the cornea being merely nebulous at this part. In the centre and the immediate neighbourhood of the line of incision, the leucoma is dense. No relapse of ophthalmia since the incision was made. No staphyloma, no synechia." The child was too young to admit of the state of the retina being tested.

The results which followed operation in this case suggest the possibility of curtailment of the duration of some cases of keratitis by a resort to section of the part most deeply infiltrated, and so allowing of escape of the exudation inclosed in the proper substance of the cornea. That the eye was saved from destruction by the special treatment adopted can scarcely admit of doubt.

The next case presents features of still deeper interest to the ophthalmic surgeon.

CASE II. *Irido-choroiditis of the Right Eye, and Collapse of the Left Globe from Sloughing of the Cornea consequent upon Scarlatina Agnosa.*—Edith Rogers, aged 7, was admitted into the Birmingham Eye Hospital, August 31st, with acute irido-choroiditis of the right eye and collapse of the left, attended by great irritability and acute conjunctivitis on both sides. The child was in low health, having suffered at Christmas 1873 from scarlet fever, which was followed in two months by dropsy of the hands and feet. The ophthalmia commenced about a week after the onset of the fever, and the left became in three weeks blind from sloughing of the cornea. Inquiries from the mother elicited that she could read six weeks after the fever, but that it "injured the eyes". On admission, the state of the ocular tissues was as follows. In the right eye, great congestion of the external tunics, and of the choroid veins; iris greenish, devoid of lustre, and rather woolly on its surface; the pupil black, circular, and contracted to a diameter of one-twelfth of an inch, insensible to the mydriatic effect of atropia; the cornea clear. Tension—1 to 2. The left globe was collapsed, its conjunctiva tumid and highly inflamed. Intense photophobia affected both eyes. The patient, it was said, had never complained of pain.

Treatment.—The inflamed stump was excised, with some temporary benefit to the right eye.

On October 12th, six weeks after admission, finding the state of the right eye and its vision were in no degree different to what they were before excision was performed, I considered the proposal of a resort to some surgical operation with a view to arrest the persistent irido-choroiditis. Iridectomy was dismissed as inapplicable, from the probability of being followed either by a destructive ophthalmitis, or closure of the enlarged pupil by an irido-capsulitis. Peritomy I determined to keep as a reserve in case of the failure of the proceeding that was adopted; which consisted in the making, during the anaesthesia of chloroform, a vertical incision in the cornea, at midway between the outer side of the pupillary border and the corneo-scleral epiphysis. The extremities of the wound were by design not extended to the margin of the cornea, as I conceived that the process of repair set up in such a wound would be more likely to relieve the cyclitis than if the incision terminated near to the roots of the iris. The eye was dressed with the hot-water pad. On the seventh day of the operation, a marked retrocession was observed in all the objective symptoms. The iris was bright, but still greenish in colour; the conjunctiva and sclera uninfamed; the latter presented a few dilated and tortuous veins upon its surface. Tension—1½.

The vision improved so much that the child could guide herself and pick up pins from the floor of the day-room. Her health also underwent a change for the better. The state of the vision in the course of the two months the patient remained in the hospital after the date of operation varied at uncertain intervals, and occasionally a patch of redness would appear on the scleral conjunctiva, and be attended by undue sensitiveness to light, but there was no return of the iritis. On December 14th, she returned home. The iris was bright, but greenish

in colour; the pupil clear and immobile; some scleral injection was present, and irritability to light. Vision about her usual average; she counted fingers at twelve inches. Tension—1½.

In the first of these cases, the destruction of the cornea and formation of a large staphyloma were imminent, and were unquestionably prevented by free incision of the infiltrated and gorged membrane.

The second is an example of an extremely rare sequela of scarlatina, unless we view the irido-choroiditis as bearing the relationship of sympathetic ophthalmia to the inflamed stump. I do not pretend to make even an attempt to decide so intricate a question, but content myself with drawing the attention of surgeons to the evident safety of the plan adopted in a class of cases which has hitherto proved little, if at all amenable, to any kind of treatment; and I would fain hope that surgery has acquired, in free section of the cornea, an addition to her scant and imperfect armoury for doing battle with one of the most destructive internal inflammatory diseases of the eye.

EXTRACTION OF FOREIGN BODIES FROM THE EAR.

By WALTER RIVINGTON, F.R.C.S.Eng., M.S.Lond.,
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HAVING had considerable experience in the removal of foreign bodies from the ear, I can strongly support the recommendations of Mr. George P. Field of St. Mary's Hospital, contained in the JOURNAL of March 4th. From the time of my first connection with the Aural Department at the London Hospital, I have used no other means of extraction of foreign bodies than the syringe, aided occasionally by chloroform, the dependent position of the organ, and the use of a small pair of curved forceps as soon as the substances appeared near the external end of the meatus; and I have never failed in procuring their ejection. Various kinds of foreign bodies, including peas, beans, pebbles, glass-beads, and pins, etc., have been removed in this way, and on several occasions after previous efforts by the same method or other methods had been unrewarded by success. It is the custom, I know, to make use of special forms of extractors, and instrument-makers vend a rude implement with a bent steel eye, which finds its way into cases of instruments fitted up for the receiving-rooms at hospitals. From the incautious use of such a weapon, I have seen irreparable damage done to the membrana tympani, combined with displacement of the malleus and incus, and I cannot but think that it should be banished from the surgical armamentarium.

In one or two cases, the injury has been effected when no foreign body has been present in the ear. A child is brought, we will say, by one of its friends, with the statement that there is a foreign body in the ear, and a request for its removal. The foreign body, perhaps, has fallen out, or was never in the ear at all. Without an examination of the ear, either by direct light or with the speculum and mirror—a proceeding which should never be omitted—a probe is introduced into the meatus, and, reaching the membrana tympani, impinges upon the malleus, which is thus mistaken for a foreign body. The "spud" is called into requisition, clicks in its turn against the malleus, and, being used with a view to being placed behind the obstruction, very speedily causes laceration of the membrane and displacement of the bone. The malleus being dragged forward into the meatus, more certainly yields the indications of a foreign body, and renewed efforts are made for its removal, with the effect of increasing the mischief, hæmorrhage, and pain. Much the same results have followed the impaction of a small stone or bead where the spud has been employed, the foreign body being driven inwards against the membrane and causing its rupture. In one case, which came under my notice, the promontory was mistaken for a foreign body. It is a great error to suppose that it is necessary to extract a foreign body from the ear immediately, or at the first visit of the patient. When prolonged efforts have been made unsuccessfully, it may be much better to wait for a few days until the tenderness, disturbance, and disposition of the parts involved to bleed, and thus obscure the view of the impacted substance, real or supposed, have passed away. The practitioner may disregard the anxiety and urgency of the friends for further interference, and explain the advantage of delay. At the next visit of the patient, he will be rewarded by the comparative ease with which the syringe brings away the offending substance.

Although I have seen a loop of wire employed for the removal of foreign bodies with great dexterity and success, I feel convinced that for general use it is not to be compared in point of safety to the syringe. In imperfectly educated hands, it would be liable to perforate the membrane.