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 uninflamed; 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.,
Surgeon to the London Hospital; and Surgeon in charge of the Aural Department.

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.

To sum up, the procedure in cases of foreign body in the ear should be as follows.

1. Examine the ear carefully by direct light and with a speculum and mirror, to determine the presence, position, size, nature, and peculiarities of the substance.

2. If the patient be a child and refractory or timid, place him on a couch, give ether or chloroform, and use the syringe, turning the affected ear downwards. This manoeuvre may be aided, as Mr. Field suggests, by drawing the auricle upwards and backwards, and applying the nozzle of the syringe to the upper wall of the passage.

3. If the foreign substance do not fall out, as it usually does, after a little patience, but stops near the orifice of the meatus, a fine pair of forceps may be used to withdraw it.

4. A needle or a pin, or other elongated body which does not fill the passage, may be readily taken out with forceps through the speculum, or by the aid of a direct light.

I must not conclude these few remarks without expressing my obligation to the late lamented Mr. Hinton for the kind assistance which he rendered to me some years ago, when desirous of acquiring some little knowledge of the method of examining aural patients. I remember speaking to him about the extraction of foreign bodies, and asking him what method he recommended for their removal. He replied that "You will not use any other method than the syringe if you are wise". With the slight exception specified above, I have never done so; and I feel sure that those who adopt the sound advice tendered by Mr. Hinton and Mr. Field will never have occasion for disappointment or regret.

ON THE NON-IDENTITY OF CROUP AND DIPHTHERIA. AS SHOWN BY THEIR PATHOLOGICAL AND HISTOLOGICAL ANATOMY.

By JOHN MOIR, L.R.C.P.Ed., Bristol.

THE clinical and therapeutic distinctions between the two diseases have been so often and so well pointed out of late, that I need not mention them. Are there any pathological? In the opinion of Laennec, diseases cannot be more certainly distinguished than by their anatomical characters. Sir J. Alderson remarks: "*Post mortem* examinations (and this would include physical, chemical, and microscopic) are, in fact, your greatest, most invaluable opportunities." And this is so, if we take as a corollary the teachings of Dr. Wilks, that we must combine pathological with clinical facts.

Recent investigations prove that in both croup and diphtheria the membrane consists largely of corpuscles; but Dr. Carpenter warns us, that "it has been too much the habit of pathologists to speak of 'coagulable' or 'plastic' lymph as if it were always one and the same thing; yet it really presents various gradations of character, which are manifested in its different degrees of organisability, and in the diverse nature of the tissues developed from it." Sir James Paget points out two typical forms, the fibrinous and the corpuscular, between which the others are intermediate; and I hold that the membrane of diphtheria partakes more of the fibrinous, and that of croup of the corpuscular character. The fibrinous exudation coagulates into a fibrous clot resembling that of healthy blood, but showing a more distinct fibrillation; the latter (the croupous exudation of Rokitsky) is characterised by the want of any proper coagulation, the fibrous clot being replaced by an aggregation of cells, which in their first appearance resemble very nearly the primordial condition of the corpuscles of the fluids of the absorbent vessels and the colourless corpuscles of the blood. In the "croupous exudation", the false membrane is not plastic, to no extent fibrinous even, but very largely corpuscular. Rindfleisch, the most recent observer, says "it is not fibrous at all, but only apparently so". Moreover, it is usually thin and soft just below the larynx; about the middle of the windpipe, more dense and firm; lower down, generally looser again, pulpy and broken into flat or tubular fragments, and never connected by blood-vessels with the surface from which it proceeds; it can be entirely detached, often with but little difficulty; in fine, it is more brittle, less fibrinous, and much more albuminous than the usual products of inflammation. Mr. Campbell De Morgan, in a letter I received from him on this subject between four and five years ago, after stating his belief in the non-identity of croup and diphtheria, says: "There is no evidence that any development goes on in the false membranes; the moment they are exuded, they are virtually dead; whereas in morbid growths, properly so-called, there is a constant de-

velopment going on in the new tissue." We find, then, that the corpuscular is the lowest form of the "exudation of lymph". Diphtheria and croup are both in their false membranes forms of this nature, though not and never in an exactly similar degree; croup being a lower form, and, therefore, less organisable than the other.

Mr. J. Warrington Haward, from his observations in St. George's Hospital and elsewhere, states his belief that "there are two distinct combinations of symptoms, with their associated pathological changes, to one of which may be given the name of croup, to the other diphtheria; that these combinations are constant; and that the elements and terms of the one are never mixed with those of the other (though there may be certain added qualities common to both); that the constant combinations are of the important and essential element in each quantity; and that these are always occurring in the same and distinct association. There is sufficient ground for regarding each of the two diseases made up of these elements as distinct and non-identical."

Mr. Campbell De Morgan expresses no doubt that "in these cases the blood is diseased, and in different manners, and there is exudation of special fibrinous material" (that is, fibrinous material special to diphtheria) "and of white blood-corpuscles more or less changed" (in croup).

In answer to my inquiries, my old teacher Mr. William Turner, Professor of Anatomy in Edinburgh University, states, on the authority of Dr. Sanders, the Professor of Pathology (his information being derived from careful personal research with the microscope), that "the essential difference between the croupous and diphtheritic membranes lies in this, that the croupous membrane affects the epithelial investment of the mucous surface, whilst the diphtheritic is not confined to the surface, but is a product of the entire thickness of the mucous membrane". And here we have the true physiological explanation of the interesting clinical fact that, whereas in diphtheria there are often epistaxis and bloody expectoration, these never occur in croup. Dr. Sanders is not alone in his observations; in Germany, similar anatomical distinctions are the bases on which the distinctive differences between the two diseases are rightly founded. The *Lancet* of March 29th, 1873, states that "the exudation in diphtheria varies very much, and is decidedly distinct from that of idiopathic croup". M. G. S. Empis also, in his observations at the Hôpital Necker in 1848, had noticed, and in 1850, in the *Archives Générales de Médecine*, very distinctly enunciated, that "the mucous membrane of the trachea is the only part where we have observed pellicles adherent to a mucous membrane, without the latter having been more or less denuded of its epithelium. On whatever other part I may have had occasion to study diphtheria, whether on the mucous membrane of the lips, the tongue, the pharynx, the nasal fossae, the vulva, etc., the mucous basement membrane was found in immediate contact with the false membrane, and the epithelium no longer existed." Here we have a close agreement, closer could not be, between two independent and trustworthy observers, Empis and Sanders; and, not to be too long, I will only bring forward one other, whose competency will be at once acknowledged by all, Mr. Jabez Hogg, President of the London Microscopical Society, and Surgeon to the Royal Westminster Ophthalmic Hospital.

In a paper on Diphtheritic Conjunctivitis, a rare affection occurring about once in every thousand cases, Mr. Jabez Hogg ably demonstrates the non-identity of croup and diphtheria both in their morbid anatomical and histological characters. His remarks are amply confirmatory, and much more thoroughly complete than the facts observed by Sanders and Empis, as I have above recorded them, and are so thoroughly to the point, that I cannot do better than repeat them here as I find them in the *Lancet* of March 15th, 1873. "On looking over the literature of diphtheria", says Mr. Hogg, "I find considerable differences of opinion prevailing, not only on the general and special characters of the disease, but also upon its morbid histological anatomy."

The important difference between "a fibrillated membrane prone to pass rapidly into the ulcerative process", and "a delicate film" which never penetrates to the deeper structures, and is thrown off very soon after formation, seems to have occurred to no one. "I maintain that a sharp line can be drawn between the histological anatomy of diphtheritic membranes and croupous casts; and, surely, if so, it will no longer be denied that they indicate perfectly distinct and specific forms of disease. I will first glance at the general naked-eye appearance of the tracheal membrane usually found in diphtheria. As its name implies, it is a dense, compact, yellowish-white or reddish-grey coloured, well-formed mass, of from half a line to three lines in thickness. It is usually firmly adherent to the subjacent membrane, and moulded upon it, and is more or less friable; so that, on traction with forceps to detach it, it comes away piecemeal, or in a layer somewhat resembling chamois-leather. If forcibly detached, a breach of continuity of surface is made, and bleeding occurs, as the mucous membrane is always much