ophthalmologist it is instructive to note what degree of vision is possible after a tolerably severe attack of albuminuric retinitis.

Mrs. S., aged 65 years, about the beginning of October, 1893, began to suffer from swelling of the feet and legs. At the beginning of November she consulted her family medical attendant, who noticed puffiness of the face, and on examining her urine diagnosed Bright's disease. Next day there was general oedema all over the body, with severe headache and vomiting. A few days thereafter she had a severe convulsive seizure, and was comatose for several days. After that she gradually recovered. Within two months the oedema had completely disappeared, and she was able to go about. About the second week of January, 1895, she first observed gradually increasing failure of vision, and came under my notice on February 5th, 1894. Her visual acuity was then found to be very defective, being only able to distinguish large objects, such as the hand. On ophthalmoscopic examination both eyes were found to present the appearances of typical albuminuric neuro-retinitis. The discs were slightly swollen, greyish red in colour, and the edges were completely obscured. A group of brilliant white spots arranged in radiate fashion surrounded the macular region in each eye, being most abundant in the right. There was diffuse opacity of the retina, and a few hemorrhages scattered over the fundus, but most abundant at the periphery. The urine was pale in colour, specific gravity 1008, and contained considerable albumen. There was no cardiac hypertrophy or notable elevation of arterial tension.

The patient was put upon strict milk dietary, with mild saline diuretics, which were afterwards replaced by iron and strychnine. There was a very rapid improvement in the patient's visual acuity, and within two months she could read No. 1 of Jaeger's test types. The eyes, however, were easily tired, and she was not allowed to use them for a considerable time for reading or any fine work. There was a gradual diminution of the amount of albumen in the urine, although a slight trace was to be found for about a year thereafter, but since then none has been found. With the gradual disappearance of the albumen there was a gradual disappearance of the neuritis, and of the brilliant white spots surrounding the macula. When the albumen finally disappeared from the urine the discs had resumed their normal appearance, and the only trace of the white spots was a faint mottling observable on close inspection in the perimacular region. The hemorrhages left the only permanent traces of the previous condition, in the shape of a few little pigmented spots chiefly at the periphery.

The patient was shown at a meeting of the Glasgow Medico-Chirurgical Society on February 8th, 1897, almost exactly three years after she had been seen with her albuminuric retinitis. She was in excellent health, completely free from albuminuria during the last two years, and with normal visual acuity. The only traces of the past condition observable in the fundus were the slight perimacular mottling and the few pigmented spots already mentioned.

Great attraction has of late years been drawn to the very unfavourable prognosis as to life in cases of albuminuric retinitis.

In 1888 at the Ophthalmological Society in London a discussion took place on this subject. Dr. Miles Miley, who introduced the discussion, said that out of 45 cases of albuminuric retinitis which he had been able to trace the majority were dead within a year, and only one lived beyond eighteen months. He concluded from his study of these cases "that the prognosis is so bad that eighteen months is an exceptionally long term of life after the changes have been recognised." Dr. E. O. Belt, of Washington, at a meeting of the American Medical Society, Ophthalmological Section, in 1895 gave some interesting statistics. Basing his remarks on an analysis of 419 cases, he found that in hospital practice 85 per cent. died in the first year, and only 6 per cent. lived more than two years. He further remarked that several ophthalmic surgeons of large experience had seen none who survived more than two years. Professor Knies, in his recent work on *Relations of Diseases of the Eye to General Diseases*, says that "life is rarely prolonged longer than one year, at the most two years after the discovery of the retinal affection."

Although my own experience confirms the above statements, yet there are notable exceptions to this gloomy prognosis in albuminuric retinitis, of which the case just recorded forms a brilliant example, the patient being alive and in good health three years after the attack.

Albuminuric retinitis most frequently occurs in chronic interstitial nephritis, and these are the cases where the rapidly fatal termination nearly always justifies the hopeless prognosis. But albuminuric retinitis is met with in all forms of renal disease, even in the acute forms. The cases of recovery are met with in those acute and subacute cases of nephritis where the albuminuria disappears, the retinitis gradually subsiding with the disappearance of the albuminuria. This favourable termination is seen most frequently in the albuminuria of pregnancy, where the albuminuria is generally transitory, disappearing after the birth of the child. The case recorded was probably an acute parenchymatous nephritis. The suddenness and severity of the initial symptoms, the early appearance of general oedema, the severe uræmic symptoms, the convulsions and coma, the rapid im-

provement of the patient, the absence of cardiac hypertrophy, and the subsequent complete disappearance of the albuminuria are all in favour of this view.

This case conveys the important clinical lesson that in albuminuric retinitis the prognosis must largely depend upon the character of the renal affection. If it occurs in the course of a chronic interstitial nephritis, the prognosis is exceedingly grave, and the probability of the patient surviving beyond a couple of years is very slight; but if it occurs in the course of an acute or subacute parenchymatous nephritis, with careful treatment and under favourable hygienic conditions, there is considerable hope both that the patient may recover from the renal condition, and that the retinitis may disappear, leaving the patient with vision but little, and possibly not at all, impaired. Hence in every case of albuminuric retinitis, before expressing any opinion as to prognosis, the great importance of ascertaining by careful consideration of the history and examination of the urine, the character of the renal affection, cannot be too strongly urged.

THE ORIGIN AND DESTINATION OF CERTAIN AFFERENT AND EFFERENT TRACTS IN THE MEDULLA OBLONGATA.*

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[ABSTRACT.]

IN attempting to ascertain the origin and destination of some of the afferent and efferent tracts which exist in the medulla oblongata the lateral region of the medulla was divided or destroyed between the ascending root of the fifth nerve and the inferior olive, the restiform body, Edinger's direct sensory cerebellar tract (tractus nucleo-cerebellaris acustici), and the posterior columns and their nuclei were divided, and Deiters's nucleus was severed from its connections with the medulla. The first of these procedures resulted in degeneration of two efferent direct tracts, which could be traced throughout the whole length of the spinal cord, the one occupying the periphery of the antero-lateral region, and the other an area close to the crossed pyramidal tract, but distinct from it, both direct tracts sending fibres to the anterior horn on the side of the lesion at different levels in their course. Afferent degenerated fibres were found passing from the seat of lesion, some reaching the cerebellum by way of the restiform body on the same side, and some by way of the anterior cerebellar peduncle after passing through the medulla and pons, while others, intimately associated with the fillet, were traced to the region of the anterior corpora quadrigemina. Owing to interruption of internal arciform fibres by the lesion there was degeneration of the opposite interolivary layer and fillet. Similarly fibres passing from the restiform body to the inferior olive were interrupted, and degenerated in consequence.

Division of the restiform body resulted in degeneration of afferent fibres to the cerebellum, and of efferent fibres to the formatio-reticularis and inferior olives. No tract in the spinal cord was found degenerated after this lesion.

Section of the "nucleo-cerebellar tract," formerly known as "Edinger's direct sensory cerebellar tract," resulted in no degenerations other than those met with in injury to Deiters's nucleus which is imbedded in the tract. No afferent fibres degenerated from the nucleus of Deiters to the nucleus globosus in the cerebellum.

Severance of Deiters's nucleus from its connection with the medulla resulted in degeneration of an efferent direct antero-lateral tract throughout the spinal cord, fibres passing from it to the anterior horn of the same side, and a few to that of the opposite side. This tract is probably identical with that met with after the lesion to the lateral region of the medulla, and has been described as having its origin in the cerebellum

* The experiments were conducted in dogs and monkeys. Full details of the procedures and results, together with a review of experimental work by others bearing on the subject, will be published elsewhere.

by Marchi, Biedl, and others; but there seems little doubt that it is derived from Deiters's nucleus, as was supposed by Ferrier and Turner. Some degenerated fibres reach both anterior columns of the spinal cord by way of the posterior longitudinal bundles, and terminate in the lower cervical region. Other fibres which enter the posterior longitudinal bundles have an opposite course, and were traced to the region of the quadrigeminal bodies, where they appeared to terminate. Some degenerated fibres passed from the seat of lesion across the *raphé* on the ventral side of the sixth nucleus, to terminate in the *formatio-reticularis*; others passed to the region of the opposite superior olive, some appearing to enter this structure, while others became associated with the opposite fillet, passing with its fibres to the region of the anterior corpora quadrigemina.

Section of the posterior columns and their nuclei in the medulla was performed in order to control certain of the other experiments, but no degeneration was met with other than that of the opposite fillet so clearly established by Mott, as following a lesion of the posterior column nuclei, and of fibres passing to the cerebellum in the *restiform* body.

In view of these results, the tract formerly known as the direct sensory cerebellar tract is regarded as an efferent tract from the cerebellum to Deiters's nucleus, through which nucleus the cerebellum is brought into connection with the anterior horn of the spinal cord on the same side, and to a lesser degree on the opposite side, throughout its whole length. Thus, although there is an absence of any evidence of a direct efferent tract from the cerebellum to the spinal centres, there is evidence of an indirect efferent path through Deiters's nucleus.

It appears probable that through the connections of Deiters's nucleus with the cervical cord, by way of the posterior longitudinal bundles, and with the corpora quadrigemina and superior olives, the cerebellum is brought into relationship with these centres, and that the connection thus brought about may have important bearings in regard to the movements of the head and eyes.

X RAYS: A SIMPLE METHOD OF INCREASING THE EFFICIENCY OF THE TUBES.

BY
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It is a matter of common experience with *x* ray workers that their results are vitiated by the faulty working of the tubes. The more a tube is worked the greater is the difficulty in making it fluoresce actively. Working in a warm room, or better still the application of heat to the tube itself, in some measure mitigates the trouble, but does not cure it. It has been suggested that this difficulty is due to increased electrical resistance in the tube, this resistance constantly increasing, till at last the current absolutely refuses to pass through and light up the tube, preferring to spark round outside the bulb. The possible explanation of this phenomenon is as follows: Whilst the current is passing the outside of the bulb becomes positively charged and attracts the negative particles inside, producing a polarised condition of the glass. A suggestion made by Porter seems to have been partially successful in overcoming this trouble. He surrounded the cathodal extremity of the tube with a ring of copper wire, closely approximating but not touching the glass, and attaching it to a wire either connected with the earth or to the cathodal wire. This method is fairly effective, but cumbersome. Dr. Arnold Berliner has devised an arrangement of a wooden cylinder pushed over the tube containing the cathode, moistening the inner surface with glycerine. But we have lately employed a very simple method of working, which entirely obviates these troubles. It consists in wrapping the cathodal extremity of the bulb in damp cotton wool or lint, one end of which touches and surrounds the bulb at the cathodal end, whilst the other is attached to the cathodal wire. The effect is instantaneous. A bulb that prior to the attachment of the wool had refused to light up at once became flooded with a most beautiful

blue green effulgence, the most effective form both photographically and optically.

We claim that the power of the tube is absolutely increased; that the working of the tube is constant, a large portion of the flickering being done away with; that as long as the current is passing the tube will continue to act efficiently; that it does away with the trouble of heating; that it prolongs the life of the tube, it not being necessary to have such frequent recourse to the pump.

The wool or lint cover must be carefully applied so that no loose fibres are allowed to hang round the bulb; and the anodal connection must also be carefully adjusted, no loose fibres being left to act as a brush. Given these precautions the trouble with sparking will not appear, and the general annoyance caused by the constantly increasing electrical resistance would seem to be entirely counteracted.

A successful demonstration of this method of treating bulbs was given at the Hull Medical Society on April 8th, 1897.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

PELVIC CELLULITIS FOLLOWING GONORRHOEA.

[Communicated by the DIRECTOR-GENERAL R.N.]

R. W., aged 20, was admitted on August 11th with a large venereal sore inside the prepuce, phimosis, and urethritis; circumcision was performed, and the wound healed by granulation. A month later he had an attack of cystitis and right epididymitis, which was treated by rest, irrigation of the bladder with listerine, and fomentations. On October 11th the left epididymis was affected, the inflammation involving the left cord; there was slight pyrexia.

On October 24th he complained of pain in the left iliac region, which was dull on percussion and somewhat tender; the bowels were loose, and the stools contained mucus. On examination *per rectum*, the prostate was found to be enlarged and tender. On October 26th there was hectic pyrexia. The patient now complained of very acute pain in the left iliac region, which was dull to level of umbilicus, and the left lower abdomen was distinctly prominent. The bowels were very loose, and there was a constant discharge of clear mucus *per anum*. On examination, the bowel was found to be almost occluded $2\frac{1}{2}$ inches from the anus by a rounded hard swelling on the left side, the size of a foetal head at term. Fluctuation was detected in the left scrotum. Assisted by Surgeon May, who gave ether, I opened a small abscess on the outer side of the left testis, and as the cord was very tense and swollen I extended the incision to the left internal ring; several localised collections of pus were found in the substance of the cord. As I now thought I could detect fluctuation in the left iliac fossa, I extended the incision towards the left anterior superior iliac spine, and on reaching the transversalis fascia above the internal ring a tense swelling presented; this was opened, and half a pint of pus escaped. The finger could then be passed over the iliac fossa to the brim of the true pelvis. A double drainage tube was inserted, and iodoform dressings applied. The cavity was irrigated daily and quickly closed. Five days after the operation the bladder and rectal symptoms disappeared.

HOWARD TODD,
Staff-Surgeon R.N.

FOUR CASES OF LOBAR PNEUMONIA APPARENTLY DUE TO INFECTION.

With reference to the article in the BRITISH MEDICAL JOURNAL of April 10th by Dr. A. Douglas Heath on "Three Cases of Lobar Pneumonia apparently due to Infection," the following brief history of four consecutive cases of that disease in one household within a period of eight weeks, which occurred recently in our practice, may be of interest. As in Dr. Heath's cases the facts would seem to point to the presence of an infectious or contagious agent in their causation.

C. H., aged 17, took ill on October 1st, 1896, with lobar