tumour and in the cervical glands. Ten months after the first operation he was reported to be well, gaining in weight, and without local or other recurrence. The following year, however, there was further return in the glands, and the patient died from exhaustion.

HAEMATOMA OF THE LEFT ORBIT TREATED BY MODIFIED KRÖNLEIN'S OPERATION.

BY

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ABOUT four years ago A. M., now aged 38, a blacksmith, was fitting a shoe to the left forefoot of a horse when the animal, suddenly turning its head, struck him with it on the left temple. He felt somewhat dazed at the time, and experienced a sensation of fullness about the left brow and side of the head, but as there was no discoloration nor external bruise and his sight was unaffected, he thought little about it. Some months later he began to notice that when he stooped forward at his work, or bent down to tie a shoelace, his left eye tended to come forward. It returned to its proper position on raising his head again. He did not take any advice about it until he found that the condition was becoming more pronounced, especially when he turned his head to the left while bending. In that attitude his sight became dim. He at length consulted Dr. Tod of Leith, who examined his eye, but could find no obvious explanation for his complaint.

On January 2nd, 1909, he went of his own accord to the Royal Infirmary and was seen by Dr. J. V. Paterson, who also was at a loss to discover anything at fault until the patient had assumed a stooping attitude for a few minutes. The patient's statement that his left eye protruded so long as his head was low was then confirmed. Nothing was suggested as regards treatment at that time, and he returned to work.

In May, 1912, the patient got his left foot crushed by a horse stepping on it, and was off work for five weeks. When able to be about again he noted that his eye was becoming worse.

On the evening of June 19th he spent fully two hours reading the Insurance Act, and had no discomfort when he retired to bed. But on waking on the following morning he found that his left eye and lids were protruded, and that he could not move this eye in any direction. There was partial ptosis of the left upper lid and severe pain going from the left orbit to the back of his head. Dr. Tod advised him to go to the Royal Infirmary. When he came to the eye wards on June 22nd the ptosis, protrusion, and fixation were marked, but there was no definite tumour, solid or cystic, nor any nodulation to be felt in the orbit. There was no pulsation nor thrill detectable, nor could any bruit be heard over the eye or temporal region. He had almost full vision. There was nothing abnormal to be seen in the fundus. Examination of the nose, pharynx, and accessory sinuses was negative. Yet it was evident that there must be some mass about the apex of the orbit pushing the contents directly forward and interfering with the proper innervation of the ocular muscles. As it was obviously desirable to explore the condition of the orbit as far back as possible without in the first instance opening into the fascial sheath, the case appeared to Dr. George Mackay to be one well suited for Krönlein's operation. Mr. Cotterill now saw him in consultation, and concurred in the above opinion. The patient was therefore transferred to the general surgical wards on July 1st, and operated upon the same day.

Operation.

A horseshoe-shaped incision was made at the outer side of the orbit, with its base directed upwards and outwards, the lower limb of the incision being carried backwards along the zygoma. The periosteal capsule of the orbit was detached and pushed inwards with the eye. The orbital margin of the frontal, the malar bone, and the

zygoma were divided with a fine saw and chisel, and the bone thrown upwards and outwards with the skin flap. No new growth was palpable, but just inside the periosteum at the back of the orbital cavity a mass was felt which proved to be a haematoma. About a tablespoonful of recent clot was carefully removed by scoop and finger; and as nothing more could be felt except some thickening due to the wall of the haematoma, the wound was closed with horsehair stitches, and a collodion dressing applied.

After-History.

Two days later the proptosis was much less obvious, and by July 10th the wound was completely healed, and the eye apparently normal.

On July 24th the patient was discharged, and his only complaint was of slight diplopia on looking to the left.

Examined on December 12th, 1912, he reported himself fit and well. The vision of each eye was equal to 3. There was no protrusion in any direction. The movements of the left eye appeared to be perfectly performed, but he stated that he had slight diplopia on looking to his extreme left, and that he had occasionally slight pain and sensations of stretching about the left temple. He admitted, however, that these were quite trivial, and that he was practically cured.

THE INFLUENCE OF SEPTIC INFECTION IN THE CAUSATION OF EYE DISEASE.

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It is known that inflammation is Nature's attempt to repair damage. It follows, therefore, that an inflamed eye must have been damaged, and that the inflammation occurs at or near the seat of the damage.

Suitable treatment of an inflamed eye implies finding the cause of its injury in order to prevent recurrence or continuance of its action. Where damage results from a perforating wound or ulcer the cause is obvious; but in the majority of cases of scleritis, keratitis, iritis, cyclitis, and choroiditis the cause is obscure. Cause there must be, and, since physical damage is excluded, we regard the chemical effects of bacteria or their toxins as that cause. Now bacteria cannot arise within the eye by a process of biogenesis; they or their toxins come from without, brought by the blood stream.

For many years kinship between recent gonorrhoea and iritis, between syphilis, iritis, and choroiditis, and between inherited syphilis and interstitial keratitis has been recognized. So much so that these lesions are known as "gonorrhoeal" iritis, "syphilitic" iritis, and "syphilitic" choroiditis; whereas other forms of iritis are termed "rheumatic," and choroiditis is designated "myopic," "diabetic," or "traumatic," and the like.

Many of these inflammatory lesions are infective and depend for their origin on some septic focus, from which the exciting substance must travel to the seat of the disease by the blood stream. Whether the causative agent is bacterial or toxic is uncertain. On the one hand, attempts to grow organisms from the fluid of the anterior chamber in cases of acute non-suppurative iritis always fail; on the other hand, the anterior chamber is very like a joint cavity, and gonococci can be seen in and cultivated from the joint fluid in cases of acute gonococcal arthritis. Histological demonstration of the bacteria in the inflamed tissues is out of the question, because no eye is ever excised during the onset of the acute stage.

Direct evidence is therefore unobtainable, and the views here expressed are based on the evidence that has been obtained by treating the supposed source of the infection. The eye itself has often been left severely alone, and at the most merely given physiological rest by the use of a mydriatic and bathed with hot water.

Septic foci occur in three situations:

1. Along the respiratory-alimentary tract.
2. Along the genito-urinary tract.
3. On the skin or in a sinus leading from it.

The following cases are illustrative of the infective influence of chronic inflammation. The cases under review, with four exceptions, all occurred in my father's practice, and I am indebted to his notes for these abstracts. They

have all been seen during the last seventeen years, as this view of the septic influence on eye disease did not occur to him until 1895.

I. RESPIRATO-ALIMENTARY TRACT.

Chronically Inflamed Lacrymal Sac.

M. C., female, aged 45, had an inflamed eye with fine grey keratitis punctata and fine vitreous opacities. A chronically inflamed lacrymal sac was the only septic focus that could be found. The sac was removed and the eye rapidly recovered.

No case of intraocular inflammation traced to frontal or sphenoidal sinusitis has come under observation. One case of advanced choroiditis was met with, in which there was considerable ethmoidal disease—only slight improvement followed radical treatment of the nasal condition.

Empyema of the Antrum of Highmore.

Q. N., female, aged 34, suffered from defective vision associated with fine keratitis punctata. She had a chronic empyema of the antrum of Highmore, but as this did not worry her, she refused to have it treated. The keratitis punctata persisted for some months, and she then went abroad and has been lost sight of.

Chronic Suppurative Otitis.

M. L., female, aged 27, had an iritis with grey keratitis punctata and posterior synechiae. She had a chronic suppurative otitis. The ear was treated and the discharge cured, and the eye rapidly recovered.

Chronic Gingivitis and Pyorrhoea Alveolaris.

Chronic gingivitis is the commonest of all causes. It is not necessary for a tooth to be loose or for a socket to emit pus on pressure. Slight marginal inflammation around the necks of a few teeth is all that is required in a susceptible patient. Of the 176 cases under review, buccal sepsis was traced as the cause in 71.

CASE I.

E. C., female, aged 25, came for an opinion in December, 1909. Right eye quite normal; left eye vision = "hand movements." Glaucoma secondary to an iritis of three years before. The patient had pyorrhoea alveolaris.

Eight months later the patient returned on account of dimness of vision of the right eye, noticed a fortnight previously. V. = $\frac{1}{2}$, not improved by glasses. No keratitis punctata.

A fortnight later there were twelve large dots of keratitis punctata. Active treatment of the pyorrhoea was started, and the eye rapidly recovered.

Three months later right eye vision = $\frac{1}{2}$ and Sn. 0.25. No keratitis punctata present. She had completely recovered. She had had many teeth extracted, but had ten left, each surrounded by healthy gum.

Ten months later she returned with a mist in front of the right eye once more. V. = $\frac{1}{2}$ and fine vitreous opacities. Several of the remaining teeth found to be infected. Treatment of teeth started at once. A fortnight later, V. = $\frac{1}{2}$, two dots of keratitis punctata; and another fortnight later all teeth had been extracted.

There was absorption at the root tips and streptococci were cultivated from the roots. V. same, keratitis punctata still present.

Three months later, V. = $\frac{1}{2}$. Remains of keratitis punctata. Vitreous clear. Nine months later, patient quite well. Vision same.

CASE II.

M. Q., female, aged 38, realized in October, 1910, that she had had a mist in front of the left eye for a few weeks.

Right eye V. = $\frac{1}{2}$. Quite normal. Left eye V. = $\frac{1}{2}$. A few dots of keratitis punctata and a patch of superficial choroiditis in the yellow spot region. The treatment of the patient's pyorrhoea began next day.

Ten days later left eye V. = $\frac{1}{2}$ partly. Two dots of keratitis punctata.

A week later left eye V. = $\frac{1}{2}$ partly.

A fortnight later left eye V. = $\frac{1}{2}$ and Sn. 0.5. She could not see the whole of each letter at one time and reading was slow.

Four months later left eye V. = $\frac{1}{2}$ and Sn. 0.25. The patches of choroiditis were very faint.

CASE III.

W. U., female, aged 34, began to have an inflamed right eye in India in September, 1911. The patient's condition was regarded as syphilitic, and she was treated with mercury and potassium iodide; but the eye became worse. Five months later she came to England, when she was seen for the first time. Right eye V. = counts fingers at $\frac{1}{2}$ metre. Eye red, painful and tender. Much episcleritis, keratitis and iritis. No keratitis punctata.

Left eye V. = $\frac{1}{2}$. Quite normal. Many tooth stumps and much pyorrhoea alveolaris.

A month later eleven teeth or stumps had been removed. The eye got worse during the period of extraction, but rapidly improved after. Posterior synechiae had not broken down and the cornea was infiltrated in the centre.

A month later the eye was much better, and a fortnight after it was clear. There was no keratitis punctata. Three months

later right eye V. = $\frac{1}{2}$. There was a large central nebula. The eye was quite quiet and there was no keratitis punctata.

Chronic Tonsillitis.

A chronically inflamed tonsil, particularly if any crypts are blocked with muco-pus, is a possible focus.

I. L. D., female, aged 43, had an iritis with posterior synechiae, and a chronically inflamed tonsil, which was removed. The iritis rapidly subsided.

A month later the eye was quite quiet.

In none of the cases under review was the cause traced to the naso-pharynx, larynx or trachea.

Lungs.

Tubercle of the eye is, of course, quite common; and in some cases the lungs also are infected. Whether the organisms are inhaled or ingested is unimportant so far as the treatment of the eye is concerned. In no case was the tuberculous focus in such a situation as would allow of the extirpation of the whole disease. Cases occurred of tubercle of the sclera, cornea, iris, ciliary body and choroid. The more recent have been treated with tuberculin injections.

Sepsis along the abdominal portion of the alimentary tract is not often demonstrably the cause of eye disease.

Chronic Gastritis.

Iritis occurred in four cases in which chronic indigestion was the only disorder of any kind that could be discovered.

Typhoid Fever.

In one case choroiditis was noticed after typhoid, which is indeed a recognized cause of choroiditis.

Chronic Appendicitis.

W. T., female, aged 28, in the beginning of November, 1911, noticed that there was a blur in front of the left eye. This gradually became more marked, and a fortnight later she came for an opinion. Right eye V. = $\frac{1}{2}$ quite normal. Left eye V. = less than $\frac{1}{2}$ Sn. 4.5. Large patch of central choroiditis. She was sent to a dentist, who treated a small amount of pyorrhoea. In spite of this the eye got steadily worse, and three weeks later she could not recognize the test type board across the room.

Three weeks later the right eye became similarly affected. V. = $\frac{1}{2}$ slowly, the vision being blurred just below the fixation point.

There were two small patches of choroiditis just above the yellow spot region. Two days later two more patches had appeared and the vision was $\frac{1}{2}$.

Two days later, right eye V. = $\frac{1}{2}$, patches larger. Left eye as before. Surgeon reported that the patient had chronic appendicitis. There was a history of two attacks some few years before.

Four days later appendicectomy was performed. The appendix was thickened and histologically showed signs of chronic inflammation.

A fortnight later the patches in the right eye had coalesced and it looked like the left. Twenty-seven days after the appendicectomy, right eye V. = $\frac{1}{2}$ and Sn. 0.5. Left eye V. = $\frac{1}{2}$ partly and Sn. 0.63. Discs normal. Diffuse pigmentary disturbance in both macular regions. Sclera not exposed.

Eight days later, right eye V. = $\frac{1}{2}$ and Sn. 0.5. Left eye V. = $\frac{1}{2}$ partly and Sn. 0.5. A fortnight later, right eye V. = $\frac{1}{2}$, 8 letters. Left eye V. = $\frac{1}{2}$. Blur, although still present, was less dense and was just over centre of fixation.

Five months later the vision was the same, the blur less pronounced.

This is the only case of choroiditis due to appendicular trouble, but E. F., male, aged 39, had several attacks of iritis; he had had seven attacks of appendicitis, and no other source of sepsis could be found.

There is no corresponding case due to chronic inflammation of a gall bladder.

Sprue.

In one case choroiditis occurred while a patient was suffering from sprue.

Chronic Colitis with Mucus.

This was apparently the cause in two cases, in neither of which could any other septic focus be found.

W. B., widow, aged 52, had severe colitis in June, 1907, which became chronic. Three months later an attack of iritis began in the right eye. A month later, when seen for the first time, there were two posterior synechiae and much keratitis punctata. The former were broken down in forty-eight hours by atropine, but the latter remained in spite of local treatment. Two months later iritis developed in the left eye.

A fortnight later she went abroad for her colitis; she returned four months later by which time the colitis had subsided, and both eyes were quiet, and there was no keratitis punctata.

Dysentery.

One case of choroiditis occurred while the patient was suffering from dysentery in the tropics.

Chronic Constipation.

In 14 cases constipation was the only cause that could be found.

E. M., female, unmarried, aged 27, had an episcleritis. She was subject to periods of constipation, during which the eyes became red. When her bowels were freely open the eye quieted down. This occurred on several occasions.

II. GENITO-URINARY TRACT.

Bacterial Infection of the Urine.

R. M. M., male, aged 57, noticed at the end of November, 1911, that there was a blur in front of the left eye near the fixation point. V. = $\frac{5}{6}$, partly and slowly. There was a small patch of pigmentary disturbance near the yellow spot.

The patient was edentulous. His false teeth were quite clean. His urine was found to contain a streptococcus and a coliform bacillus in less than 0.001 c.cm. There was no albumen or pus. Vaccines were prepared and given over a period of three months. The blur gradually disappeared and the vision improved until four months later it was $\frac{5}{6}$. At this date there were no streptococci or coliform bacilli in the urine.

Urethritis.

The male urethra as the result of gonococcal infection is frequently the cause of eye trouble. The urethritis need not be recent. In iritis a definite history of gonorrhoea is sufficient to justify the administration of a gonococcal vaccine. These cases clear up rapidly if the vaccines are given in sufficiently large doses.

No case has come under observation where chronic inflammation of the Fallopian tube was the cause of any eye trouble.

Uterine Polypus.

L. D., aged 39, suffered from a recurrent iritis, with keratitis punctata. After the removal of a uterine polypus she had no further attack.

Utero-vaginal Discharge.

E. S., aged 26, suffered for four years from recurrent attacks of iritis. She had a chronic utero-vaginal infection with a Gram-positive anaërobic organism, which suddenly became acute. She was cured of it, and since that date she has had no return of her eye trouble.

III. THE SKIN OR A SINUS LEADING FROM IT.

Varicose Ulcer.

F. C., female, aged 55, was ill in bed with a varicose ulcer. Iritis with keratitis punctata developed in the left eye. No septic focus other than the ulcer could be found. Left eye, V. = $\frac{5}{6}$. The ulcer healed and the eye rapidly recovered. Two months later: Left eye, V. = $\frac{5}{6}$.

Chronic Purulent Discharge from the Navel.

E. M., female, aged 20, was suffering in May, 1903, from an iritis with posterior synechiae and keratitis punctata. Right eye, V. = $\frac{5}{6}$. The teeth were bad and were put in order. No other source of sepsis could be found. In spite of all treatment both eyes got rapidly worse.

Four months later: Right eye, V. = $\frac{5}{6}$ partly; left eye, V. = $\frac{5}{6}$. A physician found that she was suffering from a purulent discharge from the navel, which the patient admitted had existed for a year. When once this was treated and cured the patient's eyes made a rapid recovery. Three months later: Right eye, V. = $\frac{5}{6}$; left eye, V. = $\frac{5}{6}$ partly. A year later: Right eye, V. = $\frac{5}{6}$ partly; left eye, V. = $\frac{5}{6}$ partly.

It not infrequently happens that two causes are acting at the same time, such as pyorrhoea and tubercle or tubercle and syphilis.

E. G., female, aged 37, was suffering from a cyclitis. Many vitreous opacities were present, and no fundus details could be seen. As her gums were extremely bad, her teeth were extracted, and the vision rapidly rose from "counts fingers at 2 metre" to $\frac{5}{6}$. It was then possible to see the fundus. Diffuse choroiditis was present, and the suggestion of syphilis was borne out by a positive Wassermann reaction. The patient was inoculated with mercury and given a dose of salvarsan (0.6 gram), but the vision never improved beyond $\frac{5}{6}$.

Patients often suffer from some chronic inflammatory lesion for years without ill effect; then perhaps after some minor ailment which reduces vitality, such as exposure, trauma, or a "cold," the eye will suddenly become inflamed. That such minor ailments are only the exciting, and not the predisposing, cause, is shown by

the fact that the eye remains inflamed long after they have ceased to act, while it recovers rapidly with the cleaning of the septic area. This is particularly noticeable after operations. Patients whose mouths are septic frequently take a long time to recover from such an operation as a cataract extraction. If, however, the septic focus is removed, the eye will often recover rapidly.

A. B., widow, aged 56, had a left extraction with iridectomy. On the fourth day there was a good anterior chamber, the cornea was bright, the pillars of the iris were free, but there was much scleral and circumcorneal injection. Six days later the eye was slightly worse. There was no keratitis punctata. Her teeth were found to be carious, and there was some pyorrhoea for which she was treated. A week later the eye was much better; a fortnight later the eye was white.

Susceptibility to the influence of chronic inflammation may be hereditary.

L. G., male, 54, had iritis. He explained that it was "gouty iritis." His father and his grandfather had had it before him, and he supposed that it must have been the port in the "good old days." He had a very septic mouth, which was put in order. He rapidly recovered from his iritis, and has not had another attack.

It may be worthy of note that the areas of septic inflammation which are found by analysis of these 176 cases to give rise most often to eye troubles are those that are subjected to frequent mechanical disturbance. For example, infection of the gums, which are massaged at each meal, or of the male urethra, which is continually disturbed during micturition, are each more productive of eye trouble than infection of the mucous membrane lining the frontal or any other sinus, or of the cervix uteri.

It may of course be argued that, whereas very many people have very septic mouths, very few have inflamed eyes, and that if there were any real connexion between septic teeth and inflamed eyes many more eyes ought to be inflamed. This seems to me to be an argument of little force, for whereas many men get gonorrhoea, very few get gonorrhoeal arthritis.

I would suggest that senility of itself and myopia of itself do not cause choroiditis. The senile arteritis and the stretching of the choroid in myopia each tend to reduce the resistance of the choroidal tissues. I suggest that these are really cases of septic choroiditis occurring in eyes that are in a weakened state. In support of this contention, I would like to point out how very much less choroiditis one sees in private patients with myopia than in hospital cases, and that senile central choroiditis is most frequently found in patients of the workhouse type.

CONCLUSION.

It is in no way desired to suggest that it is necessary in every case to find out and treat a septic focus to cure the patient. Many cases of iritis and the like recover under the influence of ordinary treatment and the action of drugs, but such cases frequently recur unless the septic focus is treated. In cases of choroiditis I believe it is necessary to treat the cause thoroughly early in the disease in order to obtain any great recovery of vision.

The object of this paper, and of the analysis of cases of which it chiefly consists, is to bring out the relationship of the patient's "general condition" to eye disease. Absolute proof that any one case recovered because one type of treatment was employed is impossible, and if my contention were based upon but two or three cases that had recovered as the result of treating (or removing) the supposed septic cause, I should base no argument upon it. It is the fact that no fewer than 176 cases have been subjected to careful analysis, which emboldens me to maintain the views here expressed. I hold that these eye conditions are often septic in origin and not due to anaemia, idiopathic tendencies, rheumatism, or the gouty diathesis.

THE Optimists (Lennox House, Norfolk Street, Strand, W.C.) are a group of business men whose object is to economize time and money in commerce. But among their list of fourteen specific aims there are two which will appeal to every one—they desire to save time wasted by irrelevance at public meetings and by unpunctuality at appointments.