

BACTERIOLOGICAL INVESTIGATION OF NORMAL AND DISEASED EYES.

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LAST YEAR, at the suggestion of Lt.-Col. E. A. R. Newman, C.I.E., M.D., I.M.S., I examined consecutively the eyes of 100 men, of whom 53 were Hindus and 47 Mahomedans; they were all males, except 8 or 9 who were adult females. The results noted at the time are as follows:—

Disease.	Number of cases.	Number of eyes examined.	Organism found.
Cataract ...	18	30	Staphylococcus albus ... 20 " aureus ... 2 Streptococcus ... 1 Pneumococcus ... 2
Trachoma ...	8	12	Streptococcus, diplobacillus, and staphylococcus.
Leucoma ...	5	7	Staphylococcus.
Panophthalmitis and staphyloma.	6	10	Staphylococcus aureus.
Ophthalmia and conjunctivitis.	9	15	Gonococcus, staphylococcus, influenza bacilli, pneumococcus and a thick diplobacillus.
Corneal ulcer and keratitis.	8	10	Staphylococcus aureus. Pneumococcus and streptococcus.
Lachrymal obstruction with abscess.	7	10	Pneumococcus and staphylococcus.
Pterygium ...	6	9	Staphylococcus.
Blepharitis ...	5	8	Staphylococcus.
Normal eyes ...	28	56	No organism, staphylococcus, thick diplobacillus.

In every case I took a smear on a slide, and made a culture on an agar slope. By touching the selected area, or the diseased area such as an ulcer, etc., with a tiny sterile swab, the reflex rolling of the eye-ball spreads the organism into the small swab. This is used to inoculate the agar tube and prepare a film for staining. At times a second swab is necessary to make the film preparation. Often the same swab succeeds in serving both purposes. Two films, one from each eye, may be stained on the same slide a little apart from one another. In the absence of sterile swabs platinum loops were used. These were made of delicate fine wire, with no projecting cut end, *i.e.*, both ends twisted together to meet the glass rod.

Sometimes a culture gives a negative result, while the film made from the same source shows some organisms. It would appear that microscopical examination of a stained film is generally sufficient for the clinical diagnosis of cases. It was found after using different kinds of stains that Löffler's methylene-blue is a good stain suitable for most of the cases. Samples were easily obtained from diseased eyes, with ulcers, etc. In normal or congested eyes, having little or no discharge, the swab sometimes fails to catch organisms from the conjunctival sac. In such cases the inner canthus shows organisms. It was found that this spot is practically never free from micro-organisms. But it is difficult to get the pure causal organism there, because it is

often found mixed with other skin cocci (mostly staphylococci) at the mucocutaneous junction.

Eighteen men with cataract were examined; some had cataract in both eyes, others in one eye only, the remaining eye being either unaffected or already operated on for cataract. The samples of discharge were obtained from these eyes before they were subjected to preliminary preparation for operation, *i.e.*, protargol eye drops for a few days. Staphylococcus albus was found to be the commonest in most of them. Staphylococcus aureus was seldom found, and then those eyes showed some amount of inflammation. Two cases out of this group showed pneumococci and streptococci. It is interesting to note that, along with other healthy cases, these infected eyes, after passing through the usual routine preliminary preparation before the operation, *i.e.*, protargol drops for a few days, were operated on and went home cured. Thus it appears that the presence of pyogenic micro-organisms, even pneumococci, is no contra-indication to cataract operations, provided the patient undergoes systematic treatment preliminary to operation.

The next group of cases were those having other eye diseases, mostly belonging to the outdoor dispensary, some from eye ward and other sources; the cases being common eye diseases like conjunctivitis, corneal ulcers, lachrymal abscess, pterygium, trachoma, etc., etc.

Conjunctivitis and ophthalmia cases.—These show gonococci, influenza bacilli, pneumococci, staphylococci, and thick diplobacilli. At times the smear preparation fails, while the culture shows organisms. But often the film preparation is very useful, because it shows a greater variety of organisms than the culture. The reason is probably that either the same medium is not equally suitable for all kinds of micro-organisms, or the stronger variety of organisms overgrow the weaker kinds. Therefore, the smear gives a better picture of the relative frequency of different organisms present in a case of mixed infection.

Trachoma.—In trachoma, too, staphylococci are very common. Some cases show streptococci in addition.

Blepharitis.—The few cases that were examined were in both stages—inflamed and suppurating. They showed staphylococci only.

Lachrymal obstruction and abscess.—These cases showed pneumococci in addition to the usual staphylococci.

Corneal ulcers.—These cases present some difficulty in taking the swab, because the smallness of the affected area, unsteadiness of the eye-ball and photophobia work together to throw difficulties in the way of the worker. When a film is stained, staphylococci are mostly seen. In two severe cases pneumococci were found; both showed progressive spreading ulcer with threatened prolapse of the iris. Thus it seems that the common mild form of corneal ulcers, including the traumatic variety, that often

appear in the out-door dispensary, are infected with staphylococci, while severe spreading types are complicated with other organisms like pneumococci and streptococci. Because the corneal ulcer appears in a short time, common people call it "touch of wind." In Dacca, particles of steel and conch-shell accidentally introduced act as foreign bodies. These accidents are often followed by ulcers. They are found in people who work in conch-shells—called *Shakhari*.

A few healthy eyes were examined from in-door patients of surgical and medical wards of the Mitford Hospital. In many of them staphylococci were found. Those persons having infected eyes were found to suffer no inconvenience. Perhaps they were immunised as a result of chronic mild infection, and the bacteria or cocci had lost their pathogenic power. This is particularly noticed in cases showing thick diplobacilli of the Morax-Axenfeld type. This organism, besides healthy eyes, was found in mild conjunctivitis cases. They were easily cured by the ordinary zinc or alum boric eye drops of the Mitford Hospital. As staphylococci are very common in healthy eyes, it is doubtful whether they can cause conjunctivitis on unbroken surfaces. If they do, perhaps they are those mild chronic cases.

OBSERVATIONS ON THE TREATMENT OF HOOKWORM DISEASE.

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(Submitted by Dr. G. W. Thompson, Chief Sanitary Officer, Jharia Mines Board of Health.)

THE investigation and treatment of cases of hookworm disease has been carried out on Bhowra Colliery under the supervision of the Jharia Mines Board of Health during the months of April, May and June, 1919. In all 759 samples of stools were examined, and 451 of these proved positive. Of the infected persons 109 voluntarily presented themselves for treatment with thymol.

The drug was administered to adults in two successive doses, each containing 30 grs. of thymol together with an equal quantity of sugar of milk; the interval between administration was two hours, and the purgative used was mag. sulph., in two doses, one before the administration of thymol and the other one afterwards. The following facts were observed:—

1. That symptoms of mild poisoning, such as headache, giddiness, nausea and vomiting, weakness, palpitation of the heart, weak pulse, were more marked in the early cases, when the dose of mag. sulph. was $\frac{1}{2}$ oz., than in later cases, when the dose had been increased to 1 oz.

2. It was noticed that if patients were allowed to drink copious draughts of water during treatment, vomiting was fairly frequent; but if the water was only given in small quantities to allay thirst, vomiting was absent.

3. The first patients treated were accommodated in a building not well suited for the

purpose, in that ventilation was not as good as it should have been; the later ones were accommodated in a much superior room, and it would appear that free ventilation forms an important part in preventing toxic symptoms.

4. With regard to dietary, vomiting and nausea were much more frequent when rice, dal and curry were given, and were practically absent when a meal of bread, curry and tea without milk were substituted for the first-named diet.

5. The most striking observation was that in eight of the cases which were treated, the patients, before treatment, suffered from night blindness, and the treatment resulted in a complete recovery from this defect. These patients were the only ones, among the 109, who suffered from night blindness, so that recovery was cent. per cent., and was complete two or three days after the first administration of thymol.

It would be interesting to ascertain whether other observers have noticed any association between hookworm disease and night blindness, and whether in their experience treatment with thymol has been curative of the latter defect. If this troublesome complaint can be cured by such a simple method as the administration of thymol, the benefit to be conferred on the population of this country generally will prove enormous, as in some districts more than half the population suffer from night blindness.

ORGANO-THERAPEUTIC TREATMENT OF MALARIA.

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TWELVE bottles were supplied for trial in my wards of the preparation named Bazogen, purporting to consist of the extract of *Spleen, Pancreas, Thyroid, and Adrenal*. The supply of the drug was limited, and a fair trial could not be given. The accompanying charts show that a drop in the temperature occurs even in severe cases with the drug alone. Two cases were kept on Bazogen for some time. One was a case of malignant malaria and the other of malarial cachexia. In the former the temperature recurred as soon as the drug was stopped. In the latter the spleen diminished a little and then enlarged again. In a third case of malarial cachexia the spleen remained unaffected, but the treatment could not be prolonged.

It was not possible to determine the effects of the tablets on the parasites in the *peripheral circulation* in every case, but in the two cases examined the parasites were not found in the blood (taken at various intervals) after a prolonged search.

CONCLUSIONS.

From these few cases it may be *surmised* that the temperature drops in every case on the administration of these tablets. It seems probable that beyond a temporary check on the activities of the parasite no special action exists, although a more extended trial may possibly justify a contrary opinion.