should, in addition to excluding all the appropriate eye diseases, remember also the possibility of such a rare illness as primary erysipelas of conjunctiva bulbi, especially when the patient gives a history of previous attacks of erysipelas.

REFERENCES

THE X-RAY TREATMENT OF BLEPHARITIS*

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Pathology

Two main varieties of blepharitis are known, viz.—

1. Blepharitis squamosa.—Here the lid margin is reddened, the palpebral conjunctiva is hyperaemic and the space between the cilia is filled with small thin whitish scales resembling dandruff. The scales can be removed imperfectly by washing or more thoroughly by forceps, leaving the lid margin reddened and succulent, but not ulcerated. The cilia fall out easily. They soon grow again.

Instead of the scaly formation mentioned, the lid margin may present yellow crusts with no underlying ulceration, due to the drying of the excessive sebaceous secretion.

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Burning and itching prevail. Generally there is also present a chronic type of catarrhal conjunctivitis.

2. **Blepharitis ulcerosa**, or the eczematous type of blepharitis.—This is a more severe process. The lashes are matted together with yellow crusts, and on their removal a raw bleeding surface remains. From the centre of each yellow elevation a cilium arises. The lid presents numerous abscesses from suppuration in the hair follicles and their sebaceous glands. It shows an irregular worm-eaten condition from the cicatrices of healed abscesses and the extension of those yet existing. Where the cicatrices exist, the cilia are absent because of destruction of their follicles.

Blepharitis ulcerosa, accordingly, is distinguished from blepharitis squamosa by its deeper situation and the purulent character of its inflammation.

Treatment

Stumpf and Eichenlaub, using a dose of 50 per cent. unfiltered rays at intervals of two weeks, got results in some cases. Comberg saw some cases treated by 10 per cent. and 20 per cent. X-rays with no improvement. Fried and Haidenhein recorded good results in a great number of cases. Other workers recorded similar results, but permanent cures were not recorded by anybody.

Since the X-rays are the most suitable agent in treating conditions of a similar pathological nature, *e.g.*, furunculosis, sycosis vulgaris, favus, ringworm of the scalp, and all other conditions in which the hair follicles are affected, it seems quite feasible to try to perfect a technique by which blepharitis can be treated and cured. I have found that the essence of success in the treatment of these conditions was in the thorough epilation of the cilia by the action of the rays. Cases in which the treatment failed to cause complete epilation, though showing marked improvement during the course of treatment, have invariably recurred. I have also found that better results were obtained when the epilation dose was given fractionally than when given all at once.

To evert the lids, and at the same time to make the X-rays safely applicable to the eyes, I have devised a special forceps (Fig. 1).* It consists of a forceps with long handles and slightly bent terminals. The length of the handles allows the forceps to be supported at the side of the head, thus taking its weight off the eye itself. To the terminals are attached upper and lower eye shields. These are made of 3 mms. of zinc and 2 mms. of lead. The addition of the latter cuts off practically all secondary irradiation. These shields are removable, and are made in a series of different sizes (Fig. 2).* With these adjustable shields the same

* Made by Siemens, Reinger.
forceps can be used for both eyes. When the forceps is in position, all the globe, with the exception of the fissure between the lids, is protected. This latter part is protected by a lead glass prosthesis (Fig. 4).*

Technique.—The eye is made insensitive by the application of cocaine drops; the prosthesis is applied and one lid is held between the limbs of the forceps; its margins, together with the cilia, are made to face upwards; the rays are applied through a circular diaphragm of lead glass of 5 cms. diameter (Fig. 3).†

After each sitting some of the cocaine drops are applied.

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* Made by Siemens, Reinger.

† The treatment formula is as follows:—K.V. 120, Filter 1 mm., Aluminium M.A.3, S.F.D. 30 cms. The epilation dose with this formula took 7 minutes. One third of this dose is given every third day.
Subsequent events.—Slight congestion of the lids occurs after each sitting and lasts for a few hours. Improvement begins to take place one week after the last sitting; the scabs dry up, the congestion becomes less apparent, and the irritation diminishes. The epilation begins about the end of the second week, and is complete by the 21st day. When this happens, ung. hydrarg. ammoniatum 2 per cent., or yellow oxide of mercury ointment (1 or 2 gr. to the oz.) is applied daily until all signs of inflammation have completely disappeared.

In all the cases treated, the eye lashes grew again about two months after the epilation.

Relapses.—In the 20 cases treated by me so far, two have relapsed, and I attribute this to incomplete epilation. The treatment was given again to these cases one month after the regrowth of the cilia, and both were cured.

The cases treated were of both the squamous and ulcerative types.

Attention to general health was given, and other affections present, i.e., conjunctivitis, entropion, ectropion, lacrymal stenosis, and nasal-pharyngeal diseases, were given appropriate treatment.

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ABSTRACTS

I.—CORNEA


(1) By employing standardized hair of different thicknesses and a scheme whereby the cornea was mapped out into nine regions, Zitting investigated variations in the sensitiveness of the