cyst wall, and in these eight cases I have succeeded only once and my son, R. W. B. Holland has succeeded once. An incision is made into the conjunctival fornix nearest the tumour. The muscles are not usually divided, and blunt dissection enables the operator to display the bluish white cystic tumour. The contents are then aspirated, and with the needle still in place one half the volume of 20 per cent. formaldehyde is re-injected. An attempt is then made to remove the cyst entire with a pair of fixation forceps. If it tears, however, recourse must be made to a piecemeal removal. The cyst wall has often a very deep attachment, in which case it is difficult to be sure that the whole of the cyst wall has been removed.

The final result of the operation depends on whether the cyst has been removed in its entirety or not. Failing this, mild sepsis and a severe reactionary swelling and chemosis are apt to follow, even though the wound is drained with a fine rubberglove drain as a routine. The vision of the two patients, whose cysts were removed entire, was unimpaired. It is impossible to give an opinion of the ultimate visual result of the other six patients, because they did not report again to hospital after being discharged two or three weeks after the operation.

From this series of cases it is evident that the earlier the patient comes for treatment the better, since operative removal of a large cyst is rendered very much more difficult.

A LOW POWER INFRA-RED MICROSCOPE

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A DESCRIPTION has been given of the application of an infra-red viewing system to the penetration of corneal opacities¹. The basis of the device is a German image converter tube that has the property of transforming an image in the infra-red region of the spectrum (at about 10,000 A.U.) into a visible image on a fluorescent screen. Through the courtesy of the Admiralty Research Laboratory we have been able to carry out a similar investigation using the equivalent British instrument. It has been confirmed that such equipment can be used with advantage when assessing the advisability of a corneal graft in certain cases.

Apparatus. The instrument in its present form was originally designed for an investigation of the variation of pupil diameter at very low levels of illumination. The viewing device, which can

replace the normal binocular microscope on a slit-lamp table, consists of a low power microscope incorporating an infra-red image converter tube². The latter is a small glass tube containing an infra-red sensitive photo-surface and a fluorescent screen. An infra-red image focused on the former is transformed into a visible image (green) on the latter. A high voltage (6,500 volts) is necessary to actuate the converter and this is supplied from a vibrator power unit operating from a 12 volt battery. The microscope can be mounted on the normal binocular stand using a simple adaptor. Overall dimensions of the instrument are 16" $\times$ 2 $\frac{1}{2}$ " diameter. Varying layers of filter, absorbing visible light but transmitting the infra-red, are fitted over the slit-lamp.

Application. The improved transmission characteristics through a small particle scattering medium of the longer wave-lengths of radiation results in improved visibility through certain types of corneal opacity using the infra-red microscope. Experience has been limited, but results have shown that considerable density of cornea can be penetrated by suitable angles of projection and degrees of purity of beam. A contact glass improves penetration of a rough surface. A Koeppé glass could be tried for retina or vitreous. After-cataract penetration varies with the purity of beam. Penetration of cataract appears to depend on the chemistry of cataract, not the apparent density, *e.g.*, if in an opaque cornea the active iris dilates well revealing apparently a clear lens, the lens may or may not have a secondary or senile cataract. Early normally invisible calcification appears to show a strong fluorescence.

Possibilities are apparent in pathological and clinical investigations. The instrument is easy to use and even less trouble to the patient than the visible slit-lamp arrangement.

Availability. The image converter tubes have now been made available commercially and, in addition, the Admiralty are prepared to receive enquiries regarding the assembly of complete microscopes for use in clinics. Any such enquiries should be addressed to the Director of Research Programmes and Planning, Admiralty, Fanum House, Leicester Square, London, W.C.2.

REFERENCES

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