only one other corneal condition which need be mentioned and this is an apparently rare type of dystrophic change occurring after β radiation: it is characterized by epithelial and stromal œdema with a marked loss of corneal sensation. These corneal changes occur in the absence of increased pressure and are presumably due to a loss of anatomical or physiological integrity of Descemet's membrane.

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Osteo-odonto-keratoprosthesis
[Abridged]

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There are a number of conditions in which keratoplasty is almost invariably a failure, as the graft rapidly becomes vascularized and opaque. These include pemphigus, severe chemical burns and bullous keratopathy in aphakia.

In order to try and maintain a clear window in such heavily vascularized corneas, various types of intracorneal acrylic implants have been devised, but most of these have later been extruded.

Strampelli (1963) suggested an ingenious and very logical method. He had noted that gutta-percha will remain in the root canal of a tooth indefinitely, but will be rejected if implanted into soft tissues. So it would seem probable that if a plastic acrylic implant could be held in a piece of the patient's tooth and bone, and the whole placed in a corneal envelope, the tooth and bone would form an autograft picture-frame for the acrylic, and so prevent its extrusion.

Briefly, Strampelli sacrifices three teeth. An upper canine with some surrounding bone is removed. Cross-sections of tooth and bone, about 1 mm in thickness, are cut and the small portion of root canal so obtained is enlarged to receive the plastic implant, which is cemented into place with dental cement.

We have made some modifications to this technique.

First, the whole tooth is not removed. A generous apicectomy is made on an upper canine, taking half the root without damaging the adjacent teeth. The remaining part of the tooth is root-filled in the normal way, and the cavity will of course be filled by regeneration of bone in the ensuing weeks. Thin cross-sections are then cut, producing discs about 0·5 to 1 mm in thickness. This is easily accomplished with the use of a diamond disc rotating at a high speed under a saline spray. The block of tissue is held in a pair of Spencer Wells forceps or a small vice. Care is taken not to complete the section, the last piece of bone being cut with a knife as otherwise the section is likely to be lost.

The root canal is gradually enlarged with a burr, rotated by hand, until it is just large enough to accept the cylinder of acrylic, 2 mm in diameter; a very close fit is sought, so as to avoid using dental cement, which may act as an irritant.

The fitting of the lens into the disc of tissue has to be carried out on a small anvil with a depression in the centre to accommodate the lens, as the latter projects down below the lower surface of the disc of tissue.

Pre-operative estimates have been made of the corneal thickness, as this determines the length of the acrylic and the amount of lenticulus that must project anteriorly and posteriorly.

It is fundamental that 0·2 mm should project in front of the epithelium and posterior to the endothelium; otherwise these membranes would grow over the acrylic.

We did the first of these operations six months ago, on a 27-year-old West Indian patient who had had a keratitis in 1949. He had four unsuccessful corneal grafts, and in May 1965 presented with a secondary glaucoma of undetermined ætiology. The tension was controlled by penetrating cyclodiathermy. His pre-operative vision was perception of light in the temporal field, and post-operatively it was hand movements in the temporal field.

The corneal part of the operation followed Strampelli's technique, where he dissects a central 2 mm lamellar graft and then performs an intralamellar dissection. It is easy to traumatize the edge of the graft, so that it is better to commence the lamellar separation near the limbus and, when this is complete, to remove a full-thickness disc 2 mm in diameter from the centre of the cornea. The disc of tooth and bone containing the acrylic lenticulus is then gently inserted until the lenticulus engages in the corneal opening. Since the eye is soft at this stage, the anterior surface of the acrylic may be flush with the front of the cornea, but it usually projects to the desired 0·2 mm when the intraocular pressure rises.

The limbal incision is sutured in the normal way. Two weeks later the eye is quiet and it is easy to identify the acrylic, tooth and surrounding bone (Fig 1).

A second patient who had a similar type of operation had been blind from birth due to con-

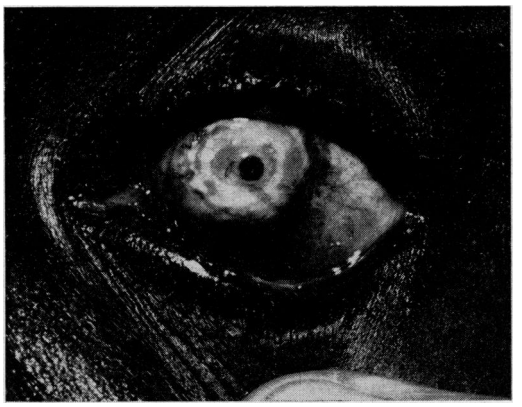

Fig 1 *Osteo-odonto-keratoprosthesis. Note central acrylic surrounded by tooth and bone*

genital cataracts and ophthalmia neonatorum. His only eye had perception of light with poor projection. His cataract had been needled in 1927, so that keratoplasty was complicated by vitreous loss and secondary glaucoma, which responded to two cyclodialyses and two cyclodiathermy operations.

In July 1965 he had an osteo-odonto-keratoprosthesis. Although the visual improvement was from perception of light to counting fingers, he was very pleased; but two weeks later, as he was brushing his hair, he accidentally touched his eye and suddenly lost all vision.

The acrylic was lost, but the tooth and bone remained *in situ*.

The corneal disc was examined histologically, and minimal necrosis of the surrounding cornea was noted.

The third patient, who has Marfan's syndrome, is the best to date. He had gross corneal œdema following removal of a dislocated lens. Keratoplasty was associated with vitreous loss and the graft remained opaque.

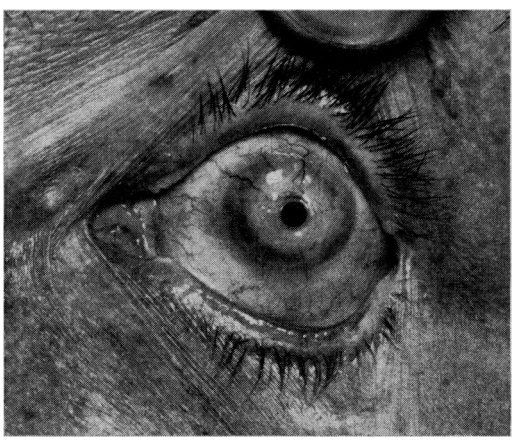

Fig 2 *Osteo-odonto-keratoprothesis. Post-operative vision 6/36*

Four months ago he had an osteo-odonto-keratoprosthesis operation. This has remained in position without any difficulties, and his vision has improved from perception of light to 6/36 with the addition of a +3 sphere (Fig 2).

His visual field is grossly restricted. This could obviously be improved if the diameter of the implant were increased from 2 to 3 mm. but we feel that increasing the size of the implant is premature until we know more about this operation.

Unfortunately many patients who could otherwise be considered suitable for this operation are precluded because they are edentulous. Nail and cartilage are possible alternatives. Nail has the disadvantage that it is dead tissue, except at the nail root, but if it is taken from there it is liable to grow in the eye.

Two patients have had onycho-keratoprosthesis operations. Pressure of space does not allow clinical details, but we have the impression that nail is gradually extruded.

Another patient has had a chondro-keratoprosthesis, a piece of cartilage being removed from the 8th costal cartilage. Our best results to date have been with these chondro-keratoprosthesis operations.

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Preliminary Observations of Soft (Hydrophilic) Contact Lenses [*Abridged*]

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Plastics used in contact lens practice are either thermolabile or thermosetting. The former, as polymethyl methacrylate, is used extensively in hard contact lens practice. The latter has recently been used to make contact lenses by the moulding technique in Prague: and in this country, using the same material, by cutting with the lathe from the solid state. Michaels of the Amicon Corporation (1965) has also suggested a further advance. His material has ionic linkages instead of covalent-bonded linkages and promises to imitate biological tissue more closely.

Our present experience with hard corneal contact lenses dates back some fifteen years and in the correction of physiological ametropes and