Throughout the investigation of the seven haemophilic pedigrees the possibility of congenital or developmental abnormalities in the eyes of members of these families was kept in mind. No such defects were observed with the single exception of the family above described. In conclusion I must express my very deep gratitude to Miss Julia Bell for her encouragement and assistance in the study of the non-haemophilic pedigrees and in the preparation of this note.

"TWINCENTRIC" LENSES

BY

F. A. WILLIAMSON-NOBLE

LONDON

IN the August, 1936, number of this journal, a short article was published describing a type of bifocal lens in which the optical centres of the distance and reading portions were made to coincide, thus eliminating any vertical "jump" when the direction of gaze was shifted from the upper to the lower portion of the lens. The same effect is produced even if the centres do not coincide, provided they are on the same horizontal level. It is therefore possible to make a bifocal lens with the centre of the reading portion displaced inwards to the correct amount without producing "jump."

There are two practical methods of obtaining this result. The first is applicable to a solid bifocal and consists in grinding the lower segment so that its optical centre is on the same level as that of the distance portion. This works quite well, but has the disadvantage of producing a conspicuous reading segment, the upper

SOLID "TWINCENTRE" BIFOCAL LENS

FIG. 1.

The sectional view on the left shows the ridge of glass which forms the upper border of the lower segment.

border of which is clearly visible and may annoy the wearer. The appearance of this lens is similar to that of Fig. 1, there being two optical centres side by side.

The second method is applicable to a fused bifocal and consists in fusing a lower segment of higher refractive index, so made that its optical centre is at the same level as that of the distance portion and displaced inwards to allow for convergence. (Fig. 2).

This method has the disadvantage of producing some chromatic aberration in the reading segment, so that a white object when

FIG. 2.

- A Fused "Twincentre" Lens. The fused segment is so made that the optical centre of the reading portion is at its top. (In the position of the dotted line.)
- B Ordinary type of fused bifocal. The centre of the distance portion is at *a*, of the reading portion at *b*.

viewed through it appears to have a yellow upper border and a blue lower border. The effect is apparent only in bright light however, and is practically abolished by making up the lens in a slight tint about equivalent in density to Soft-lite A. Such a lens has a relatively invisible lower segment and the slight chromatic aberration produced is very soon unnoticed by the wearer. In practice it is remarkably comfortable to wear and can be used for games such as squash rackets and tennis without one's being conscious of wearing a bifocal.

I am much indebted to Messrs. Theodore Hamblin for the time and trouble they have taken over the making of this lens. By virtue of its possessing two centres side by side, it is designated as "Twincentric."