

and which it is supposed to be, also it must be accurately centred if spherical. The axes of the cylinders must be clearly and exactly indicated. The base apex line of the prisms must be the same, in fact, everything in connection with the glasses should be of the highest grade of workmanship and as perfect as such workmanship alone can make it.

The trial frame is, perhaps, the most important part of the case, for it is to be used on every customer, and, as it is to be so used on every customer the dimensions of the faces of whom vary so very much, it is clear that, in order to fulfil what it is needed to do must possess the many and various qualities of an ideal working tool. No non-adjustable trial frame can serve for small and big faces, for adults and children. Lightness is required, and so also is perfect rigidity and strength, and it is desirable that it be made of a metal that does not easily rust. Consequently, there is nothing to compare with finely-tempered steel nicked as the material from which it should be made. It must be adjustable as to interpupillary distance, as to the height of the nose, as to the set of the bridge, and as to the length of the arms, the latter being curled so as to pass over the backs of the ears, and keep the frame firmly in place. Without these qualities all the work is rendered more difficult, as the frame constantly shifts and slides forward if straight sides be on it. If the frame has no means of being advanced and retarded, lenses become smudged by contact with the lashes, and the power of the lenses is actually changed by too great a distance between them and the eyes. Accurate testing is impossible when the axes of the lenses themselves are not exactly in the lines of vision, but decentred from them as occurs when there is no adjustability for pupillary distance. Adjustability as to height is needed so as to avoid decentering and so as to allow of the lenses being lowered for close work.

As all the adjustabilities of the frame need to be done when it is on the face, they should be, therefore, achievable by means of thumbscrews, and these thumbscrews must be so placed and sufficiently large to allow of easy manipulation. Each eye piece should have carriers for three lenses, the one for the spherical, the other for the cylinder, and the third for an extra spherical or for the opaque disc. The front carrier, which is intended for the cylinder, must be capable of revolution,

so that the axis of a cylinder can be easily got into any desired meridian. The frame must be scaled for angle notation indicating the various meridians, and the numbering should be large enough, and clear enough to be easily seen by the optician at a fair distance. The insertion of the lenses into the frame should be sideways and not from the top, otherwise it is necessary for a lady to remove her hat and veil, a thing not always convenient, besides which, inserting them thus relieves pressure on the nose instead of increasing it. The lenses should be retained in the carriers by means of springs, so that they cannot shake about, otherwise a cylinder after being fitted may become shifted. If the frame be also scaled for pupillary distance, height, and set of bridge, and length of arm, it is somewhat of an advantage, as it gives the optician a rough idea of what sized frame is required by the customer. The lighter the frame is, and the more securely it sets on the customer's face, thanks to the length of the arms being adjustable, the less discomfort it causes. Lightness, however, must not be sacrificed to strength and rigidity. These points about the trial frame and lenses render the optician's work easier, quicker, and more accurate.

Test types for distance should be in clear, black block letters printed on white cardboard; they must be graded down to a line lower than that which represents the normal visual acuteness for the distance at which the testing is done. If the tests be made at 6 metres (20 feet), then the type must be as small as No. 45, or one lower than No. 6. If 4 or 5 metres (15 feet or so) only be available, there must be No. 3 type on the card. Black cards with white block letters are also good for testing purposes.

Hand cards for testing the sight at the reading distance are better than folding books, as they can be conveniently held in one hand. All cards must be left uncovered by glass, the latter reflecting too much light, and they must be always perfectly clean. The trial case, the test types, and a tape line scaled in centimetres, or, better, a near point measure, are the only real necessities for sight testing as done by the optician.

There are a few adjuncts which are of great utility, such as a set of trial spectacles and eyeglass frames for finding that which best suits a customer; a lens measure to quickly find the power and nature of glasses previously used by customers, or to try a prescription or stock glass; a

record book for entering data pertaining to each case; frame measuring cards for taking the dimensions of frames; small screwdrivers of two or three different sizes, and flat and hollow chop pliers for manipulating frames.

The distance test-card used for measuring the visual acuity and testing the refraction of the eye should be fastened to the wall six metres distant from the client, and beneath it, as nearly as possible in a direct line with the eyes under test, the astigmatic chart should be placed. Six metres is considered to be the proper distance for sight-testing, but, if not available, 5 or 4½ metres can serve, but no shorter distance.

Diffused sun or artificial light should fall on the test cards but not on the client's eyes; so if artificial light be employed as the illuminant, it should be screened on the side toward the client, and this is best done by a concave reflector, which serves the double purpose of a screen and of a condenser of the light on to the cards. A light is also required behind the client for illuminating cards used for reading. It is better that this be an artificial light on an adjustable bracket, so that it can be moved into any desired position to either side, above the head or in front of it, for various purposes. Altogether, if the natural light obtainable be not good, and on account of its variability in this climate, it is preferable to depend on artificial light entirely, it being uniform and constant. — *Phar. Journal (Eng.)*.

Local.

Dr. Hamill will hold a class on Retinoscopy (the first ever held in Canada) at the Optical Institute of Canada, commencing on March 22nd. Those wishing to attend should reserve a seat either by letter or telegraph, as the number will be limited.

The following students have recently taken a course in optics, under Dr. Hamill, at the Optical Institute of Canada:—J. G. Tate, St. Catharines; E. J. Morphy, Toronto; H. C. Thomas, Norwich; H. S. Saylor, Ingersoll; C. R. Lampman, Hamilton; Geo. E. Rason, Strathroy; C. A. Hamlin, Allandale; Miss Minnie McCarroll, Meaford; Geo. H. Vicker, Crediton; H. L. Bating, Toronto; Mrs. F. Fletcher, Brussels; W. P. McLaren, Watford; W. R. Bishop, Beachville.