The Oblique Prisma

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The number of cases in which, both in the horizontal and vertical meridian, occurs a heterophoria, is not rare. Mostly it is sufficient to correct only the hyperphoria, but there are cases in which the correction of the hyperphoria appears to be insufficient, supposed an eventually existing error of refraction has been corrected already. Then it is necessary to correct the deviation in both meridians by means of rotating the prisma.

Suppose, one finds in his examination with the Maddox tangent scale and rod at 5 m. a left-hyperphoria of 2 degrees and an exophoria of 5 degrees and it has appeared already that the correction of the hyperphoria gives insufficient relief to the patient, one must correct the existing exophoria too. We agree that we must totally correct a hyperphoria, but there is no "communis opinio" as to the extent in which we must correct an exo- or esophoria. To clear this, I should like to refer to the results of my investigations with Verhoeff's stereoscopic acuitymeter \ 100 normal men, examined at 5 m., appeared to have a hyperphoria of 0.5 degree average whereas the top of the distribution histogram of the lateral heterophoria appeared to lie at approximately 1 degree esophoria. The normal values vary between 1.5 degree exophoria and 3.5 degree esophoria. When one wants to correct to the norm in the above-mentioned example, one will diminish the hyperphoria to about 0.5 degree or zero and the exophoria from 5 degrees to e.g. 1 degree. When one would correct only the hyperphoria, one would give a prisma of 2 diopters basis down to the left eye; when one wants to correct the mere exophoria, one would choose a prisma of 4 diopters basis nasal. Both are, in a simple way, to combine; the strength of the prisma and the deviation of the axis are calculated as follows: the strength of the prisma is determined by the length of the hypotenusa in the triangle COB: $\sqrt{2^2 + 4^2} = \sqrt{20} = 4.47$, and the deviation is $\text{tg. } a = 2/4 = \pm 26$ degrees. The

1 Ophthalmologica 118, 182 (1949).

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prescription to the left eye thus will be: prisma 4.5 diopters, basis $180 + 26 = 206$ degrees, and to the right eye: prisma 4.5 diopters, basis 26 degrees. The above-mentioned calculation is based on the unit: prismadioptr. In these calculations one has to pay attention to the fact that the deviation, read from the Maddox rod, is adapted to or is converted to the unit prismadioptr. This unit means that at a distance of 5 m. 1 prismadioptr agrees with a deviation of 5 cm. and at the same distance a deviation of 10 cm. agrees with 2 prismadioptrs. Therefore one has to regulate

the strength of the prisma to be described in view of the distance between the numbers of the Maddox-rod used and the distance at which the examination is performed. Such correction is of high value for the correction of the vertical heterophoria, because in these cases an accurate correction is pursued.

I would like to give a suggestion in relation to the prescription of the oblique prisma. When one places the basis not only at the nasal or temporal side at the top or down

but prescribes the intermediate positions too

one needs a scheme that is accepted universally. I would make the proposal to have the Tabo scheme as a basis

of which the axes then should be widened to 360 degrees. The Tabo scheme is generally accepted among the ophthalmologists and it would give little difficulties to agree with such a scheme and let it become current. The nomenclature: nasal temporal

a. s. o. then would be substituted by an indication of degrees.