

The Science of Optics.

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Entered according to Act of Parliament in the year 1896, by Lionel Laurance, at the Department of Agriculture.

Primary Ametropia.

There is very rarely indeed Asthenopia when there is squint, as usually then the two functions of Ac. and Con. are exerted equally, or the Ac. in excess of the Con. so little as not to cause pain. Convergent squint almost always commences in childhood, and although it is said that children have sometimes outgrown it such a case must be extremely rare.

You can take it as a rule that Convergent squint is always associated with H. and caused by it. If the error of refraction be properly corrected early enough in life before the deviating eye has become deadened to visual impressions the squint can be cured. Unfortunately squint is frequently allowed to go unchecked, the child not yet having sense enough to know anything about it and the parents being under the impression that it will disappear of its own accord.

In correcting H., when there is squint, the correction must be absolutely as full as possible, or even the manifest H. should be slightly over-corrected, as it is only by removing almost entirely the necessity for Ac., and therefore of Con., that there is a fair chance of the eyes straightening out. The time that the eyes will take adapting themselves to a slight over-correction by relaxing Ac. to the extent of it is small. When the squint is alternating there is every probability of its being cured, but when it is constant the chances are not so good because the deviating eye will have become more or less Amblyopic and therefore without incentive to bring its line of vision parallel to that of the other eye. When the H. has been corrected in each eye as fully as possible, the glasses must be worn constantly and the sight retested in, say, a week's time, when the slightest alteration of the lenses found necessary is to be made. In the meantime the deviating eye is to be exercised by itself at reading as small print as possible, the better eye being covered over; this, of course, is not necessary if the squint be alternating and both of equal vision. The chances of a favorable issue depend on the amount of vision in the bad eye when you first correct it, and on what you can make it see by proper fitting and proper exercise, and it can only be successfully carried out by watching the case and re-testing at intervals of first, say, one week, then one month, then two or three months, and so on.

The proper centering of the lenses is of the greatest importance, so you must see that the frame is a very exact fit. There should be an improvement within a year or so, otherwise it can be considered hopeless, and the operation of tenotomy should be advised.

The deviating eye is always found to be of worse visual acuteness than the other, and when this has decreased to $\frac{2}{100}$ with lenses the cure of the squint can be looked upon as something like a forlorn hope; still as the H. in the other eye anyhow has to be corrected, it is always worth while to attempt to get the bad one back into use; nothing is lost by trying, and it might turn out a success, and if it does not the patient is no worse off.

Those who have H. of 1 D. to 3 D., and have not disconnected the tie between the Ac. and the Con., and who do not squint, are those who suffer most inconvenience from H.; they are constantly on the verge of squinting, as they require more Ac. than they can easily exert without. Yet their desire for Binocular V. is greater than that for clearer Monocular V.; consequently the strain is thrown on the external recti, which are weaker than the internal, to prevent the latter from turning the eyes inwards too much. These Hyperopes may squint occasionally (periodic strabismus), the stronger internal recti pulling the eyes inwards when the external recti give way, leaving no longer able to sustain the tension. The abhorrence of diplopia, however, is so great in grown-up people that the eyes are again straightened out, and it is very rare that these cases develop into constant squint; the latter either comes early in life or not at all. More will be said regarding strabismus in another chapter.

It was said previously that the proportion of the latent to the total H. is great when a person is young, and therefore you give the very strongest + lenses with which V. is as good as it can be made, and that you are not certain of the fit until the sight has been tested at least three times at certain intervals. When the Hyperope is over twenty years do not force the lenses too much; still give the strongest, and two tests suffice. After thirty the lenses must still be the strongest, but if in doubt between two give the benefit of the choice rather to the weak side and one test is sufficient. The proportion of latent H. is now very small.

Later on the latent H. becomes smaller and smaller, until a little before forty years of age there is absolutely none latent, and being all manifest you no longer give so very strong a correction, but rather veer towards a rather weaker one that makes V. = $\frac{2}{100}$. After fifty give the weakest correction possible. The selection, however, of that lens that gives best results with people over forty depends on the case itself, and a certain amount of judgment is required that the lenses be neither too weak nor too strong.

Then the younger the person the more

full must be the correction of the H.; while in advanced age give lenses that for choice are weaker than stronger, and it may be noted that the very strongest lenses for a Hyperope in youth are very much weaker than the weakest lenses for the same person in advanced age, although the total H. is exactly the same.

When a person is more than forty years of age the condition of old sight has to be considered, especially as regards the reading glasses.

With old age also there ensues a condition of the eyes in which they become defective for distance. This is known as acquired H., and will be discussed under the heading of Presbyopia.

H. can be divided into congenital or original—that with which a person is born, and which is the only kind met with in people under fifty-five. Acquired—that which is found in people over fifty-five years of age, and whose sight was previously Emmetropic. H. cannot be acquired before this age.

Aphakia, which is also a hyperopic condition, may be acquired at any age. It will be considered separately.

Congenital H. can be divided into:

Refractive—Due to want of refractive power.

Axial—Due to deficiency of length.

Either of the above can be subdivided into:

Manifest—That which is detectable and correctable by lenses.

Latent—That which is hidden by the Ac.

Positive or total—The combined Manifest and Latent.

The Manifest H. is again subdivided into the following, although the terms are now rarely used.

Facultative—When V. = $\frac{2}{100}$ without lenses and without excessive convergence.

Relative—When V. = $\frac{2}{100}$ without lenses, but only by converging excessively.

Absolute—When V. does not equal $\frac{2}{100}$ without lenses.

(To be continued.)

The One-Idea Window.

I thoroughly believe in the "one-idea" window. If there are too many things in a window people will fail to be impressed to the buying point by any one thing. They may see dozens of things they would rather like to have, but they won't have one thing driven so strongly home to them that they will feel that they must buy it. Too many attractions will drive the possible customer away. He can't buy them all, so he gives up the idea of buying any of them. A window should be trimmed with a central idea, and the attention of the public should be focused upon one thing. No matter how much frills there may be in the window, everything should tend to draw attention to one article.—*American Storekeeper.*

HOLZIN.—This is a new liquid having a base of formic aldehyde.