"PERFECT SIGHT WITHOUT GLASSES"

BY

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This attractive slogan, or some modification of it, makes its appearance every few years, and lately it has bobbed up again, this time in the programme of the B.B.C. Brains Trust. The public are recommended to read two books on the subject in which it is stated that perfect sight can be achieved by exercises (and one of the two insists on a diet as well) and without the aid of glasses. It can be said at once that neither of these books is to be taken seriously, and there is very little truth or sense in either. The purpose of this article is not to expose the tricks of ophthalmic quacks, but to state what can and what cannot be done by eye exercises.

What Exercises Cannot Do

No exercise has been devised which can make a large eye smaller or a small eye larger, or which can change the shape or refractive index of the eye in any permanent way. In other words, and it cannot be stated too clearly, exercises are not a substitute for glasses in long sight, short sight, or astigmatism. This is as much as to say that *no* exercise will replace glasses which are genuinely needed; but unfortunately there are many of us wearing glasses unnecessarily, for they are prescribed by practitioners having no medical knowledge. It is not surprising that exercises cure some people of wearing glasses which should not have been prescribed at all.

What Exercises Can Do: A. Convergence Insufficiency

To look at any near object requires an effort of convergence, and the nearer the object the greater the effort. In people who spend the day on such work it may be that the necessary effort cannot be sustained and one eye will then diverge. Binocular vision is thus broken, and diplopia results, which is interpreted by the individual as "blurring of the print." It is sometimes for this reason that one stops reading and covers the eyes for a few minutes, after which the rested internal recti can once more produce the necessary effort.

Now that the majority of the population are engaged on near work of some kind, cases of convergence insufficiency are not uncommon, and for these patients a course of suitable eye exercises is beneficial, and if the general health is sound a cure is likely to result. A holiday may also have the same effect.

To complain that the print is blurred is, in some quarters, as much as to ask for a pair of glasses. And another member will then have joined the host of wearers of unnecessary spectacles. Such a person will be a godsend to the curer of bad sight without glasses. A competent oculist would not have given him glasses in the first place, but would have put him on exercises from the start.

B. Heterophoria

A person with two good eyes working in complete harmony is said to have full binocular vision. The image he sees with the right eye is a little different from the image seen with the left, but these two images are fused into one complete picture, which thus has depth as well as height and breadth. This is stereoscopic vision.

On the other hand there is the person who has a squint. The images he sees are so dissimilar that no effort can fuse them into one stereoscopic whole, and he therefore uses one or other eye and suppresses the unwanted image—monocular vision.

In between these two types is the patient who has a heterophoria or latent squint. Here the desire for binocular vision keeps the eyes working together, provided that the general health is good and the eyes not tired. But when fatigued the eye muscles cannot summon up the effort required to sustain binocular vision, which therefore breaks down, and the eyes assume a position of rest, one eye squinting up, down, in, or out. His "hold" on binocular vision is not good and breaks down under a strain, and he momentarily becomes monocular.

The immediate effect of becoming monocular is to throw out one's judgment of distance, for the amount of convergence

required to see an object is a valuable guide to its distance from the observer. This is well demonstrated by covering one eye and trying to pour water at arm's length into a wineglass. If one eye is permanently lost other means of judging distance are called into play—for instance, the amount of accommodation required and the relative size of the object—and eventually such a person will readjust his values and once more become a good judge of distance. It is only when fatigue deprives one of binocular vision, on which one has always largely depended for judgment of distance, that any difficulty arises.

All this was perhaps of academic interest before flying became general, but it was then realized that some pilots, when learning to fly, were quite unable to land an aircraft with safety, and this although their visual acuity was up to standard; they could never tell whether they were going to land six feet up or hit the earth with a smack. The toll of aircraft so damaged became high and interest was aroused, and it was found that the majority of these young men had heterophoria.

Exercises will make many of these men first-class pilots, and to talk to them after such treatment is to be convinced. As one young man said who had been turned down for bad landing, "Now I can do a real 'daisy-cutter' every time." The development of this side of ophthalmology carries with it the names of Group Captain Livingston and Group Captain Clements, who were the pioneers of this work in the Royal Air Force, and whose study of heterophoria as it concerns flying is well known. While others are in a better position to make this statement than I, I believe that a man who has lost one eye while still young, and has had time to readjust himself, will make a perfectly safe civil pilot if the other eye is sound, but because of his restricted visual field is obviously unsafe as a Service pilot.

DIET IN PREGNANCY

BLAIR-BELL MEMORIAL LECTURE

The fourth William Blair-Bell Memorial Lecture was delivered at the Royal College of Obstetricians and Gynaecologists by Mr. W. C. W. NIXON on October 25. His subject was diet in pregnancy.

He discussed the effect of diet on health. In East Africa an interesting investigation was undertaken on two tribes, the Masai and Kikuyu, who have different dietetic habits. There were more bronchitis, tropical ulcer, and malaria among the Kikuyu, who largely ate cereals, than among the Masai, who lived on meat, milk, and raw blood. In Vienna during the last war there was starvation, and the death rate from tuberculosis was doubled in the period 1915-19. But in the province of Salzburg, where milk, butter, meat, and vegetables were still obtainable, there was little change. Again, in Germany the mortality from puerperal fever was almost doubled in twelve months as the result of the blockade. In this country it had been shown that boys from the elementary schools had poorer physique than those from the preparatory and public schools. Infectious diseases were much more serious among the children of the poor, and the incidence of dental caries was higher in the lower-income group of the population.

Deficiencies revealed by Pregnancy

He showed how the strain of pregnancy would reveal a borderline state of nutrition. Pregnancy was a "diet efficiency" test. Particularly did this apply to vitamin B₁. In Hong Kong he had seen Chinese women who early in pregnancy appeared quite normal, but later showed incipient beriberi with each additional month of pregnancy, eventually being brought into hospital *in extremis*. In some cases beriberi did not become obvious until a few days after delivery. It was the strain of labour that precipitated the condition of acute avitaminosis. Other deficiencies would reveal themselves in a pregnant woman more often than in her non-pregnant sister. This was well exemplified in Vienna in the last war, when night-blindness (due to vitamin A deficiency) developed first among the expectant mothers. Osteomalacia (Maxwell's disease) or adult