

— 4DS
L ———
— 0.75 DC axis 45.

He requires glasses for about 15 or 16 in. reading distance; write the formula.

11. A youth, aged 12, sees best with — 14 D S R and L. Would you give him this correction on your own responsibility, and if not, state your reasons?

12. A boy, aged 10, has vision $\frac{2}{30}$, and with — 2.5 DS he sees $\frac{3}{30}$, but on testing his P.P. is found to be at 12 c.m. What is probably his defect, and give your reason?

13. What do you understand by the terms "Amplitude of Accommodation," and "Range of Accommodation"? Illustrate these terms in the case of an emmetrope aged 20, a myope of 3DS aged 20, and of a hypermetrope of 3DS of the same age. Where would the P.P. be situated in each case?

14. Explain the importance of having spectacle lenses correctly centred. What would (roughly speaking) be the effect on a customer having his spectacle lenses of — 10 DS, each decentred 4 m.m. inwards, supposing that he had binocular vision?

Acquired Hypermetropia

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(Continued from page 280.)

Now let us see where Donders made a mistake. He was the first who insisted on the absolute necessity of separating the two factors, *refraction* and *accommodation*, and promoted the following theory upon those premises. He first defines the normal eye, which is free from any organic refractive defects; its gradual decline manifests only the deficit of accommodation, called *presbyopia*. He then outlines the errors of refraction: 1. *Myopia*, caused by excessive refraction. 2. *Hypermetropia*, by deficient refraction. 3. *Astigmatism*, by an inequality of refractive power in the different meridians of the eyeball. According to his theory, therefore, presbyopia is confined to the existent state of accommodation, and as the emmetropic or normal eye is free from any original refractive defects all phases of the declining accommodation have to be counted as manifestations of the commencing or, later on, advanced presbyopia. But Donders did not stop at this simple deduction, he abruptly turns

around and states that this is only true as far as the near point is concerned. He says, "the far point also begins in the normal eye to recede somewhat about the age of fifty, so that the eye becomes slightly hypermetropic," and the proof of his arbitrary assertion is *that distant vision is now improved by convex glasses*.

How much more simple it would be to limit the presbyopia of a normal eye to the decline of accommodation, thus forming the first division of general eye defects, which later on would possibly be combined with the symptoms of second sight, or with the unavoidable asthenopia. All other defects, either single or mixed, would then form the second grand division, i.e., the organic errors of refraction, which in the length of time will be combined also with the first division in the different complicated errors, contrary to presbyopia, which cannot contract any defects of the second division.

Donders' theory was readily accepted by many distinguished writers, who called it *acquired hypermetropia*, to discriminate it from the true, origin alone. Recently some writers have, accidentally or purposely, ignored this quite unnecessary distinction between the near and far point of a presbyopic eye. The defenders of this theory may claim that the normal eye loses all power of accommodation at the age of 65 years, and that such an eye should then be counted among those suffering from a stationary refractive defect; but Donders, himself, admits that distant vision has to be corrected very often at the age of fifty, when, according to his diagram of accommodation, the eye still enjoys some remaining power of it.

The total decline of accommodation at the age of 65 years can be considered only as an exception, and not as a rule, because every practitioner knows that many of his customers require stronger glasses, after that age, than they were using up to then, thus clearly showing that they had yet to lose some part of their accommodation, which would have been impossible if Donders' theory was correct.

I think there is no good reason to call the final development of presbyopia by any specific name, especially not by the name of "acquired hypermetropia." If hypermetropia is an error of refraction, and presbyopia the decline of accommodation, we should not mix them up and confuse the student with a "thousand and one" ophthalmic terms without necessity. "If our text-books were judiciously corrected and purified of all vague theories, it would not take a life time to master all the difficulties of one specific branch, but would also allow the student to devote part of his time to the general study of science, besides being an expert in his own particular profession."

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