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PRACTICAL HINTS IN

THE CORRECTION OF ERRORS OF ACCOMMODA- TION AND OF REFRACTION OF THE EYES.

A LECTURE DELIVERED DECEMBER 12, 1927,

Under the Auspices of The Fellowship of Medicine.

By ERNEST CLARKE

C.V.O., F.R.C.S.

ESTIMATION of the refraction of the eyes, and the prescription of glasses for patients, is very important work and demands the greatest patience and tact. Never be in a hurry, and if you must be in a hurry, never

let it be seen ; and although you must show no semblance of hurry, be quick at your work—it is most important not to weary your patient. Do not think it is undignified work or optician's work, no optician can do the work. The eye is an intimate part of the body, and only a trained medical man is competent to test the sight properly.

Once you have arrived at the proper correction be emphatic in your orders with respect to the use of the glasses. If you have corrected a small error which has produced eyestrain, tell your patient that if they are worn, all the troubles produced by eyestrain *will* cease—*not may* cease. Suggestion enters into the whole realm of medicine—faith in your doctor is part of the cure.

Take extreme care—a correction that is *almost* right may be worse than no correc-

tion, as it leaves the patient some work to do, which work can only be done by the eyes when small in amount. Large errors can "take care of themselves," it is small errors, errors of which the patient is often quite unconscious, that count.

Refraction Apparatus.—In testing vision, the type, which must be well illuminated and in a dark part of the room, must be at least 6 metres from the patient on the level of the eyes, and capable of being changed so that it cannot be learnt by heart.

If you want to do accurate work the trial glasses, which should be kept scrupulously clean, should be graded in eighths up to 1D, quarters up to 4D, and halves onwards.

The trial frame should be light, adjustable, and the "cells" to contain the glasses so made that the two glasses which are invariably wanted, should *almost*, if not actually, touch in the frame. If you are prescribing a spheric and a cylinder, the optician grinds one on each surface of the glass, and you want to imitate this as nearly as possible.

A reliable ophthalmometer is a great time saver and, moreover, in estimating small errors gives you a feeling of certainty you can get by no other means. Unfortunately it is a very expensive instrument, but it is "worth its weight in gold." Every instrument has its "idiosyncrasy" and you soon find out the particular one of your instrument.

Without an ophthalmometer you must rely on retinoscopy, and I urge you to have both plane and concave mirrors in one instrument (each acting as the cover and handle of the other), because the shadow moving "with" is always quicker to see than that moving "against," so that you use the plane mirror in hypermetropia and the concave in myopia.

Always examine your patient with the ophthalmoscope, even if vision appears supernormal. Look for any abnormalities—and be careful to put up a high convex glass when you are examining the cornea

and lens, as you will thus escape missing fine opacities.

The electric ophthalmoscope is a far superior instrument to the old reflecting one. A dark room is not absolutely necessary, and the patient can be examined in any position.

Cycloplegics.—Up to 18 or 20 years of age use atropine—solution of sulphate of atropine (gr. 4 ad oz.) one drop in each eye morning and evening for three days in young children, for two days in older ones, and a drop should be put in on the morning of the visit.

In older patients, up to 40 or 45, homatropine is the best—B. W. and Co.'s Tabloid "W," $\frac{1}{80}$ gr. of homatropine hydrochloride and $\frac{1}{80}$ gr. cocaine hydrochloride; this should be put in by yourself, and the patient examined one and a quarter hours afterwards.

In the case of a boy, say, aged 17, during term time at school, as atropine means a week or ten days off work, homatropine can be used, but a second installation should be made half an hour after the first.

Remember that cycloplegics are also mydriatics, and the pupil may be so dilated in some, that considerable aberration interferes with your testing; in such cases put up a stenopaic disc with an opening of 4 mm. in front of the glasses.

Testing.—In testing children, at the first visit you make a preliminary examination and order the atropine (the real work is at the second visit), but as you want, if possible, to avoid a post-cycloplegic test i.e., a third visit, you should find what the patient will accept in the way of correction. For instance, you want to know the strongest convex glass or the weakest concave glass that gives the best distant vision combined with cylinders, of which you can get a rough idea by retinoscopy and a more or less accurate knowledge with the ophthalmometer, you record this in your notes and order the atropine.

Hypermetropia.—At the atropine visit suppose your patient wants, say, a plus

sphere with a small cylinder, and you found at the first visit plus 0.75 was the strongest convex he accepted, you would not go beyond that—if you do, you will give the patient probably a glass that makes vision worse than his uncorrected vision, and he will not wear the glasses.

If at the atropine visit he wants plus 3.5 to correct the hypermetropia, then you are compelled to see him when he is normal, as you must try to get him to accept more than 0.75; perhaps you can then get him up to 1.5 or 2. There is no definite rule—it is a great mistake, as some teach, to take off plus 1 for the atropine in all patients, and order these glasses. All hypermetropes have a large amount of “postural” accommodation, and the amount varies, being more in some than others.

Remember the glasses you order are for *constant* use and should give clear *distant* vision as well as near.

To give a school girl glasses of plus 1 sphere with which to do her near work (which probably blurs her distant vision) is *totally wrong*. If this is the only defect she has, she does not require glasses, as she probably has an accommodation power of 10 or 12D. What she probably has, which has been missed, is a small astigmatic error.

Remember that many a child, before atropine is used, will ask for a concave glass, which may prove to be due to a false myopia from spasm of the ciliary muscle, hence the great danger of giving young people glasses without atropine.

Myopia.—If real *myopia* is present the child may ask at the first visit for a stronger glass than is revealed under atropine—this is due to spasm also.

Be very careful to correct the smallest amount of astigmatism and order the glasses you find under atropine without any addition—these are to be worn always. Under *no* circumstances (except in some cases of high myopia) give a weaker glass for reading; you want to train the ciliary muscle to do its proper share of work and

the glasses must be regularly worn always, except at rough games.

This is the only way to arrest “progressive” myopia.

High Myopia.—These cases require special treatment. When the myopia is very high, they will not accept the full correction even for distance and certainly not for near work.

Suppose your patient, aged 20, has -10 with a cylinder, you may find the best treatment is to give -8 for general use with a -2 as a “spy” glass to put up in front when looking across the room, &c., and this -8 will probably do for *reading*. He may have the *full* correction as a separate glass for the theatre, &c. Each case must be dealt with separately, there is no rigid general rule of treatment.

Testing Older Patients.—In dealing with older patients when homatropine is employed, the same rules apply. Try and finish the examination in one visit, therefore, before putting in the homatropine, make a rough test in order to get a general idea of the glasses required.

Presbyopia.—In older patients who are approaching or who have approached the presbyopic age, the same care must be taken, and a cycloplegic is rarely necessary.

If there are any symptoms of eyestrain, give the distance as well as the reading correction as *bifocals*.

Never give, in bifocals, a reading addition of more than 2.5; if old patients want a stronger glass, give this as a separate *evening reading glass*. Remember that a long-armed man wants a weaker glass than a short-armed one.

In all testing, each eye must be tested separately, and in presbyopia the reading addition should also be separately tested.

Astigmatism.—In all these patients you will invariably find astigmatism present, although in some cases it may be very small in amount, or perhaps only in *one* eye.

In checking your astigmatic correction, use *crossed cylinders*, in fact, in checking all your work never remove the glass, but add

minus or plus glasses to it. Supposing your final glass is plus 0.25 cylinder axis vertical combined with plus 0.25 sphere, if a plus 0.12 cylinder axis *horizontal* added improves, your correction then becomes plus 0.12 cylinder axis vertical with plus 0.37 sphere, or if a - 0.12 axis horizontal added improves, you want plus 0.37 cylinder axis vertical with plus 0.12 sphere, and so on, and then check on putting up the new glasses again with crossed cylinders to verify your work.

In selecting the axis of low cylinders the astigmatic fan will help you to determine the best position.

Impress on young people that the reward for wearing glasses is a tendency for the condition to improve, and if the error is low the glasses may be given up in a year or two, or sooner.

Anisometropia or Odd Vision.—Each eye must be separately tested, but before prescribing the glass a binocular test is most essential in *all* but children (and even in children if the difference is very great). If the difference is great you may have to lessen this difference by taking off from one glass or adding to another or both, or weakening the stronger glass. You must find what is most comfortable for the patient. Remember that these remarks apply to the *spheres* only, never alter the cylinders.

Muscle Balance.—Always take the muscle balance with the Maddox test. When *exophoria* is present, if it is low in amount the wearing of the accurate correction will probably cure it. Never give prisms to young people unless the *exophoria* is very high, and then only correct half the amount.

Esophoria of slight amount is very prevalent in our civilized life, when we are constantly looking at near objects, and is of *no* moment; if large in amount, prisms may be required for distant vision.

Patients sent to you by a doctor because of some symptom pointing to eyestrain may assert that they do not want glasses as they see all right. Explain to them that the

glasses are *not* given to improve vision, but to do work which they can do and are doing all their waking hours, which work is harmful. A patient leading an out-door life may be able to afford to dispense with glasses if the error is small, but anyone with an easily unbalanced nervous system and spending most time at close work will profit enormously by acting on your advice and *living in the glasses*.

Finally, all patients, say under 35 years of age, should be seen once a year. As you have the record of the cycloplegic testing at the first visit, this may not be necessary for two or three years. Older patients should be seen every two or three years. In some patients the refraction is constantly changing, and of course they must be seen oftener as it is important to make the change when it occurs.

DIAGNOSIS OF DISEASES OF THE RECTUM AND COLON.

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I DO not propose to bore you with a long description of all the different symptoms of disease of the large bowel, or by an elaborate description of the means at our disposal of diagnosing disease in these parts, but rather by relating to you some of the more spectacular mistakes in diagnosis that I have met with in the course of my practice, to try and illustrate some of the traps that lie in store for the unwary in this branch of medicine. Now I have always found that in medical practice one learns more by studying the mistakes that are made than by merely studying the successful cases. The reason for this is probably that there is a tendency