The Eye Examination

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IN REVIEWING the records of the examinations for Airplane Pilots, Department of Commerce, for the past two years, it was found that the number of rejections for all grades totaled (59) of which number (46) or 78 per cent, were rejected for some eye defect.

As I am interested in ophthalmology, this article will have to do mainly with a few observations and comments relative to the eye examination. The procedure follows pretty much that as laid down in the "Physical Standards for Airplane Pilots."

VISUAL ACUITY

Each eye is examined separately, a snug fit eye patch being applied to the non-testing eye. The electric test type is used and in addition to the usual group of letters ordinarily arranged on the Snellen's card, I use specially made blocks in which the letters may be interchanged as desired. As for instance:

Snellen's usual arrangement

CB

PTEO

FZBDE

OFLCTG

APEOTFDZ

Specially made blocks

ZL

CAVL

OTLPF

APOCLT

GLTAOPFV

The reason for this is that I have had candidates rejected for visual acuity who on being intent on flying, visit an optical shop presumably for a course of muscle treatments, but have, unfortunately, improved their vision only to the extent of memorizing the usual Snellen's Test Type.

If the vision is not 20/20 in each eye, a metal disc with a pin-point aperture is placed over each eye separately and the resultant vision recorded as corrected vision. This simple procedure will quickly tell us in the majority of cases whether we are dealing with a refractive error, or pathology of the eye.

Following this, the pupils are tested for the direct and indirect light reflex.

Then an inspection of the eyes, using good daylight, is made. Special attention is given to the lids for granulations and secretions, the punctum for its patency, the cornea for scars, and the orbital conjunctiva for new growths etc. Acute inflam-

matory conditions are omitted, for ordinarily, a candidate would delay submitting himself for examination in such case. Much can be gained by a survey of the outer segment of the eye.

OPHTHALMOSCOPIC EXAMINATION

Eighty years have elapsed since Helmholtz has given us the Ophthalmoscope—one of the greatest contributions to medical science. The sad part of it is, the profession from what I have observed, fail to appreciate it. Doctors, as a rule, carry a stethoscope, but no ophthalmoscope. With the former they listen and surmise, with the latter they see and recognize. In other words, one could be more sure of himself if he could see rather than hear his pathology.

It certainly is discouraging to try and point out vitreous opacities to an internist, and he, there straining his eyes through the aperture of the scope—the latter almost touching the orbit—of course, he can't see them.

The instrument would be used more generally and with good results if the profession would spend a little time to learn something about it and how to use it.

EXAMINATION OF THE INTERIOR OF THE EYE

With a plus 20 sphere in aperture, I proceed from before backwards.

Viewing successively the anterior media, lens, vitreous and fundus, during which time the amount of sphere is slowly decreased in the aperture by rotating the disc; thus bringing into focus each segment of the orbit separately, until finally the fundus, the last coat of the eye, is observed.

If one would observe the eye somewhat in this fashion, I believe he would gain considerable information, and eventually consider the examination a pleasure, rather than a routine.

COLOR BLINDNESS

The condition is usually a partial achromatopsia—a loss of perception of one or two of the primary colors—red, green and blue. The absence of all appreciation of colors is rare except in acquired color blindness.

The Holmgren's test, using the test colored and match colored yarns is very convenient. Good daylight is necessary.

The Stilling's test is a very rapid method, especially if the candidate has good color vision.

FIELD OF VISION

Fields are very important and should be given time. Frequently, early pathology of a central nature or in the globe may be prognosticated from carefully plotted fields.

The perimeter is used ordinarily; however, if pathology is suspected or exists, I resort to the Campimeter (Bjerrum Screen).

OCULAR MUSCLE BALANCE

For the determination thereof, the phorometer, with the Risley's prisms attached, is used. The findings are readily derived.

If there is a diplopia or phoria, it can be definitely measured. The personal equation entering little, if any, into the final result.

The duction tests can be quickly

made with the Risley's prisms. Frequently, the candidate will be found to have a diminished adduction. This can, as a rule, be brought to normal with prism exercise—base out—right eye.

DEPTH PERCEPTION

Depth perception is dependent on good binocular vision, muscle balance, fusion and judgment. The candidate should be advised as to the importance of this test, and the necessity of bringing the rods into approximation and not approach it as if it were just another procedure and something on the order of a toy.

After the first trial, care should be exercised so the candidate cannot judge the distance the rods have been moved by the length of the cord that has slipped through his fingers. To obviate this, I have placed a small hook twenty feet from the apparatus near the candidate, where the string is hung, while I manipulate the rods.

The time element of the above eye procedures will vary somewhat; however, for the Student Pilot with 20/20 vision and normal color vision, from twelve to fourteen minutes are consumed. For the higher grades where fields are required thirty to thirty-five minutes, or longer, is necessary—depending on the alertness and intelligence of the candidate.