

**A DESCRIPTION OF SOME OF THE
MOST IMPORTANT OPHTHALMIC
METHODS EMPLOYED FOR THE
RECOGNITION OF PERIPHERAL
AND CENTRAL NERVE DISEASE**

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A Description of Some of the Most Important Ophthalmic Methods Employed for the recognition of peripheral and central nerve disease by Charles A. Oliver

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RECOGNITION OF PERIPHERAL AND
CENTRAL NERVE DISEASE.

BY

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*For the library of the
Faculty Club -
from the author.
Feb., 1899 -*

TO

S. WEIR MITCHELL, M.D., LL.D., HARVARD,

WHO WAS THE FIRST TO THOROUGHLY APPRECIATE BOTH THE THEORETICAL AND THE PRACTICAL MEANING OF EYE-STRAIN UPON CENTRAL AND PERIPHERAL NERVE-DISORDER, AND TO BRING THIS MOST IMPORTANT BRANCH OF SCIENTIFIC MEDICINE INTO EVERY-DAY THERAPEUTICS, THIS LITTLE WORK IS, BY PERMISSION,

DEDICATED

AS A TOKEN OF THE RESPECT AND ESTEEM IN WHICH HE IS HELD

BY THE WRITER.

A DESCRIPTION OF SOME OF THE MOST IMPORTANT
OPHTHALMIC METHODS EMPLOYED FOR THE
RECOGNITION OF PERIPHERAL AND
CENTRAL NERVE DISEASE.

THE methods for the determination of the ocular signs of general neuroses and related symptomatic local disorders divide themselves into four groupings. The first, by reason of the comparative anatomical simplicity of the structures to be studied and the ease of recognition of related physiological action, constitutes the most important and the most readily understood of all of the ophthalmic methods that are employed in the objective plans for the determination of the physical conditions of the sensory groupings of the visual apparatus. The second, which in reality is a direct sequence of the first, consists in the contrivances and plans that are intended for the recognition of the various subjective sensory symptoms of the apparatus. The third, the least complex and the easiest of comprehension of the entire grouping of procedures, is the series for the determination of the objective motor symptoms. The fourth, though in fact at times constituting the most important of all the clinical methods, consists in the plans that are necessary for evolving the existence, kind, and degree of the subjective

motor groupings.¹ Thus subdivided, the methods for research can be easily understood, and the significance of the findings can be readily realized. Not that any one plan can be relied upon to give proper answer as to the causal lesion: not that any single grouping of simple procedures is sufficient to vouchsafe an adequate diagnosis. Each form of relevant physiologic action and every variety of related anatomical structure must be carefully studied and conscientiously looked at *seriatim* by the aid of some of the most important and the best adapted clinical methods. This, done not only once, but repeatedly and at regular intervals from the very first suspicion of neural disorder, will, when carefully performed by competent observers, frequently afford much clinical data towards the correct and early diagnosis of grave nerve-disease that oftentimes may thus be checked by appropriate hygienic and therapeutic measures.

OBJECTIVE DETERMINATION OF SENSORY SYMPTOMS.

Taking the plan for the objective determination of the sensory groupings first, we are at once placed before the most important, the most comprehensible, and the most pretended of the procedures,—ophthalmoscopy.

¹ The topics in this monograph are so arranged that the reader may at a glance be able to group those methods of precision that pertain to the recognition of allied conditions, thus placing the entire subject-matter in a logical and definitive order, a plan that becomes eminently useful in the careful study of the various neuroses. Of course, every case should be submitted to a routine plan of examination.

Given a good instrument and a carefully-trained eye, the observer has an ample opportunity set before him in the vascular and the neural circles spread before his gaze to formulate correct opinions not only as to the character of local disease of the intra-ocular media and tunics, but as to the character of many general disorders that are prone to afford intra-ocular expression of their ravages.

For this purpose there are two methods. One is known as the direct or upright method, where the observer looks directly upon an upright image. The other is termed the indirect or inverted plan, where an aerial image or an indirect picture, which is both inverted and reversed, is seen. In the former, the observer, who should be upon a somewhat higher level than the patient, sits at the side and slightly in front of him. The source of illumination, which should be single and steady, is to be placed at the back and to one side of the patient, so that his eye is in shadow and that an angle of about fifteen to thirty degrees is formed between the patient's eye, the observer's eye, and the light. The observer should next so place his instrument before his own eye with the mirror partly facing both the patient's eye and the light in such a way that he can look directly through the sight-hole of the instrument into the pupil of the patient's eye. If this has been done correctly, the patient's pupil will, if clear, become almost uniformly red in appearance. The observer thus knows that he has illuminated the interior of the patient's eye, and that he has, in consequence, obtained the so-called red fundus-reflex. The increased power

of magnification of the apparent size of the fundal elements over the continental methods of ophthalmoscopic study by this method may, by proper contrivances,¹ as suggested to the writer by Dr. S. Weir Mitchell, be still more greatly enlarged, so as to examine almost microscopically any specially desired detail, thus rendering this method far better than the indirect plan.

To properly employ the direct method, the observer should first search for changes in the cornea. By employing a sixteen- to thirteen-diopter-strength lens in the instrument and gradually decreasing the focus of the lens to twelve-, ten-, and nine-diopter strengths for the anterior capsule, the cortex, nucleus, and the posterior capsule of the lens, most of the structures in the anterior segment of the eye can be successively studied. The lens-strength should then be weakened as the vitreous chamber is more and more deeply penetrated. As soon as the fundus is reached, the optic-nerve-head is the first portion to be sought for. This can be easily accomplished by following the course of one of the main retinal stems up to that portion of the eye-ground that appears like a pinkish-white gray plaque or disk. Found, its apparent size, measured in a number of diameters of one and a half millimetres each (which represents its real size), should next be noted. Its axis of greatest length as gauged from a horizontal zero, the comparative tints of its different quadrants, its irregularity of surface contour, the dis-

¹ The writer, at the suggestion of Dr. Mitchell several years ago, is at the present time perfecting such an instrument.