THE
BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LXVI.

THURSDAY, JULY 31, 1862.

No. 26.

THE RELATIONS OF THE OPHTHALMOSCOPE TO LEGAL MEDICINE,
PARTICULARLY AS REGARDS THE DETECTION OF SIMULATED MYOPIA OR AMAUROSIS
IN THE CASE OF PERSONS DRAFTED FOR MILITARY SERVICE.

[Translated from Dr. A. Zander's "Ophthalmoscope, its Forms and Use," for the Boston Medical and Surgical Journal.]

BY HASKET DERBY, M.D.

THE ophthalmoscope may be used with decided advantage in those cases in which the physician must give an opinion as to injuries of the eye, and especially as regards the question of their doing permanent damage. Are these injuries of so palpable a nature that the sclerotic and cornea are ruptured, and the aqueous and vitreous humors evacuated; or does a so-called traumatic cataract ensue a few hours after the injury, then the ophthalmoscope would certainly be of no avail. But cases arise in which, after a blow received on the eye or its neighborhood, a sudden partial or total loss of vision occurs; and in these cases an ophthalmoscopic examination is of great value in determining the nature of the injury. It may give a positive result, by detecting effusions of blood, retinal separation, &c.; or negative, by showing that no alterations or abnormities are to be observed in the eye itself, and thus proving that the injury in question has affected the brain. And, in this connection, the physician would further be secured from deception, when a person thus injured pretends that a loss of sight has resulted from the injury; or when a defect of vision had previously existed, and the discovery was made after and believed to be owing to the injury. For if, under such circumstances, the physician finds the traces of old disease, old exudations in the choroid, maceration of pigment, posterior staphyloma, &c., his examination with the ophthalmoscope will place him in a position to deny most authoritatively any connection between the derangement of vision and the injury.

The advantage arising from the use of the ophthalmoscope under such circumstances might perhaps appear less great, owing to the fact that the number of these cases is relatively small. Much more frequent, however, are the instances in which an ophthalmoscopic ex-

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mination is indispensable to the physician who is called upon to give an opinion concerning the simulation of myopia or amaurosis by those drafted for military service.

Wellmarked short-sightedness has always been accounted a sufficient reason for release from military duty; and, as is well known, may be imitated by accustoming the eyes to the use of strong concave glasses. In spite of this, the existence of short-sightedness has generally been considered amply proved, when the person could read a short distance off with the glasses employed as tests. But who, from such external and functional symptoms, could form an opinion as to whether this was short-sightedness depending on a defect in the power of accommodation, on a derangement of the media of refraction, or on other anomalies in the interior of the bulb? An examination with the ophthalmoscope can alone, up to a certain point, render us absolutely sure.

If we now, in a given case, have to determine whether the alleged short-sightedness is true or simulated, the following facts are to guide us (supposing always that the observer himself possesses a normal eye).

The suspicion that the myopia has been artificially produced by the use of too powerful concave glasses, would be further strengthened by the fact that the ordinary external evidences of short-sightedness are wanting in the eye in question, and that the result of the ophthalmoscopic examination does not harmonize with what here follows.

If, on examination of the eye with the mirror alone, the retinal vessels are seen as clearly and readily as in an entirely normal eye with the help of a convex lens (inverted image), a strong reason exists for acknowledging the existence of a real myopia.

A further reason lies in the fact, that, on examining the upright image, the observer is obliged to draw largely on his power of accommodation and to use strong concave glasses, in order to see the retina distinctly; for, the greater the degree of myopia in the observed eye, the greater accommodative effort and the stronger concave glasses are necessary on the part of the observer in order to clearly distinguish the details of the fundus of the eye. If the observer, having firmly impressed on his mind the appearances of a normal eye, examines a short-sighted eye (in the upright image), the surface that comes into view will appear less extensive; and, the greater the amount of short-sightedness, the nearer the image seems to approach his own eye. This image seems less illuminated, and less highly colored; while, on the other hand, it is more magnified, its different details being less clearly defined. The size of the pupil being relatively the same, the eye of the observer is unable to take in the whole of the optic nerve at a glance, as it generally can in a normal eye and in the case of a moderately wide pupil. To obtain a distinct view of the fundus it is further necessary to employ concave glasses of a depth increasing with the degree of the short-sightedness, and to

approach the eye of the observer nearer and nearer that of the observed.

In an over-sighted (hypermetropic) eye, on the contrary, a much larger surface comes into view; the image is formed at a much greater distance from the eye of the observer, is brighter and more highly colored, but much reduced in size; its details are more distinct, and the whole image better defined. In extreme over-sightedness, when the pupil is large, the observer takes in at a glance not only the optic nerve, but as much more of the fundus on either side; the whole effect being, in respect to size, similar to the real inverted image obtained by interposing a convex glass. Quite as remarkable is the difference in the choice of a corrective glass. The observer who is accustomed to examine the image of a normal eye without the assistance of a lens (behind the mirror), is forced to use, for an over-sighted eye, a correspondingly strong convex corrective glass, or must supply its place by accommodating his own eye for the near. And, finally, his distance from the observed eye, during the examination, is greater, often considerable.

If individuals, liable to be drafted, simulate partial derangement of vision or complete amaurosis of an eye,* the ophthalmoscope is almost the only means we possess of deciding with certainty whether such affections really exist or are only simulated; inasmuch as we are unable, through external symptoms alone, to either affirm or deny their presence.

Strabismus of the affected eye, mydriasis, a smoky reflex from the bottom of the eye, immobility of the iris, are in fact symptoms that may point to a total loss of sight. But these aids to diagnosis fail in cases of amaurosis in which the retina is still slightly sensitive to light; or they may exist, entirely independent of amaurosis, in cases of paralysis of the third pair, or in idiopathic mydriasis. It is well known that the artificial mydriasis, produced by belladonna, is a favorite method of deception.

The pupil has almost always been found regular, and of normal or nearly normal mobility in cases of amaurosis that commence with hemiopia, or almost total loss of vision, or that depend on detachment of the retina, effusion of blood in the neighborhood of the macula lutea, small scattered retinal apoplexies, or serous effusions. Who, however, could diagnose these troubles with certainty without the aid of the ophthalmoscope?

In many other cases the pupil retains its size and mobility, although amaurosis really exists, caused, it may be, by extensive atrophy of the optic nerve, or by a disease of its substance. In such cases the ophthalmoscope proves that the retina or the optic nerve is incapable of performing its functions, by showing concavity of the

* In cases where there was reason to suspect that the amaurosis was simulated, I have seen von Graefe employ the following test. A prism, with the base *upwards* or *downwards*, is held before the sound eye, and the patient is told to regard some such object as a pencil or ruler held *horizontally* some inches off. If he is asked how many objects he sees, and replies two, one of the images must be seen by the eye which has been stated to be blind. Cover this eye, and one of the images disappears.—H. D.

papilla, a mother-of-pearl-like color of its surface, obliteration or atrophy of the retinal vessels, &c.

Whether the ophthalmoscope will ever aid the medical expert in forming a just opinion of mental disease, must be determined at a later period; inasmuch as the data in our possession are yet too deficient. We venture, however, to express a general hope, that what we have advanced may show that the ophthalmoscope will be no inconsiderable ally to the medical expert in such cases as those stated; as well as that it merits, as such, a more general appreciation than it has yet received.

PUERPERAL CONVULSIONS.

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[Reported to the Suffolk District Medical Society, and communicated for the Boston Med. and Surg. Journal.]

CASE I.—I was called to a patient about five months advanced in pregnancy. She had complained frequently of dizziness, fulness and pain in the head, at times of a momentary loss of sight with strange noises in one or both ears. She had grown stout and fleshy during the four previous months, presented a puffy appearance of the face and general surface, with oedematous swelling of the feet and ankles. The urine was dark in color, and deposited a sediment. Treated with dilute nitric acid and with boiling water, it gave a large flaky precipitate of albumen. Just four weeks from this time, that is, about the end of the sixth month of utero-gestation, she was seized with distress in the epigastrium, followed by nausea and soon by vomiting, pain in the head, and dimness of vision, soon ending in total loss of consciousness, with convulsions. The face was distorted, the lips livid, eyes injected, with contracted pupils, the breathing stertorous, some frothing at the mouth, pulse full and rather frequent, &c. The attack, or the convulsion, was so sudden, overwhelming all sensibility and intelligence, that she complained of no pain in the abdomen; and, on examination, the os uteri was found undilatable. The paroxysms continued to recur at short intervals, less and less severe, for a period of about six hours, when she sank into a perfectly comatose state, and death closed the scene.

Treatment.—I was called soon after the first convulsion, and immediately bled freely from the arm, applied leeches to the head, sinapisms to the extremities and the epigastrium, gave injections by the rectum of infus. sennæ comp., with some oil of turpentine. I found that the paroxysms continued to recur without much if any abatement, except as the strength failed and the stupor increased. I then tried the free inhalation of sulphuric ether, with the hope to arrest them and gain time for the uterus to dilate; but in this I was disappointed, and the ether seemed rather to depress or increase the coma and difficulty of respiration. It was therefore discontinued after giving it what seemed to be a fair trial.