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Ocular Defects in Functional Nervous Disorders.

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THE IMPORTANCE OF CORRECTING OCULAR DEFECTS IN FUNCTIONAL NERVOUS DISORDERS.[1]

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THIS communication is offered, not as an exhaustive treatise, nor an expression of ideas in any way original, but for the purpose of contributing our own personal observations on a subject already extensively presented, though not, perhaps, as yet universally appreciated.

The importance of eye-strain in headaches has been so thoroughly ventilated that its acceptance seems on the way to becoming general, in this country at least, though much misconception still exists even on this subject, the fact being especially overlooked, for example, that perfect vision may coexist with serious eye-strain, and that pain in the eyes may be quite wanting even in the most severe cases of cephalalgia.

The scepticism still aroused in some quarters when the subject of eye-strain is broached, is perhaps due largely to the extravagant claims of certain writers regarding this factor in the etiology of chorea, epilepsy, and allied states, and their optimistic views regarding relief by ocular treatment. Similarly the statement of one writer, that all migraine was due to eye-strain met, naturally, with either passing notice only, or with decided opposition. The views of progressive neurologists and oculists, as well as general practitioners are becoming now gradually less conservative regarding

[1] Read before the Boston Society for Medical Improvement, April 25, 1892.

eye-strain in the causation of headaches, whatever views may still exist regarding the proportion of curable cases. Steps have also been taken to impress the fact upon the profession that other instances of disordered nervous functions, mental defects, and even that state of impaired general nutrition may arise from this same cause. Before taking up this part of the subject it will not be out of place to recapitulate the views (by no means new or original) recently expressed by the writers regarding headache.[2]

(1) Cephalalgia is the most common of all reflex results of eye-strain, whether from refractive errors or muscular insufficiences.

(2) The headache may occupy almost any locality, but is most commonly frontal or occipital, or occupying half the head (hemicrania).

(3) The headache does not necessarily appear during use of the eyes, but may come on irrespective of such use; either reaching a maximum and gradually passing away, or being more or less continuous with exacerbation, the exacerbations appearing either during use of the eyes or independent of such use.

(4) Perfect, even exceptional vision, may be possessed, such vision being at the expense of an eye-strain unnoticed by the patient.

(5) While conjunctivitis and blepheritis, pain in the eyes and difficulty in near work are often present, they are not necessarily so; in fact, the worst cases not infrequently appear in patients whose sight is so perfect, and whose eyes are so free from symptoms, as to render them extremely reluctant to consult an oculist.

(6) More than half the cases of functional headache, including migraine, are amenable to relief by the correction of ocular defects.

[2] "Ocular Headache," Cheney, Boston Medical and Surgical Journal, January 7, 1892. "Eye-Strain and Headache," Walton and Carter, Philadelphia Medical News, May 19, 1892.

We will cite two recent instances only:

Case I. Mrs. H., aged thirty-six, the wife of a prominent physician, has suffered since childhood from severe and obstinate headaches, averaging, for the last few years, two or three a week, affecting principally the fronto-temporal region, more rarely the occipital region. They generally appear on waking, reach the maximum at noon, and disappear at night. They are sometimes unilateral. Nausea and vomiting are rare. The headaches are especially liable to occur after an evening's entertainment. For the past year she has never been a fortnight without a headache. There is no pain or other symptom referable to the eyes. The sight is very acute for distance, and the tests for astigmatism by "Green's lines" negative. There was a slight frown in using the eyes, which the patient stated was a family trait. It is superfluous to state that all the usual remedies had been tried. The ocular history and symptoms were so far wanting that it required considerable faith on the part of the neurologist to insist, in the face of the incredulity expressed by the patient, upon the importance of a thorough examination of the eyes. When examined, February 20, 1892, the condition was found to be as follows: V. O. D. = $\frac{7}{8}$ with + 75 cyl. axis 90° = $\frac{7}{7}$, V. O. S. = $\frac{7}{8}$ with + 75 cyl. axis 90° = $\frac{7}{7}$. No insufficiency of the ocular muscles, or other abnormal condition. On the following day, under homatropine, the astigmatism was found to be one dioptre either eye, and correcting glasses were prescribed for constant use. The patient reported, six weeks later, that she had been perfectly free from headaches, already a striking comparison to the frequency of two or three a week.

Case II. Will serve as an illustration of the fact that a small degree of astigmatism — probably not more than would be found in nineteen people out of

twenty who were not subjected to headaches — is capable of producing, in an individual of a neurotic temperament, a very marked disturbance. The patient was a girl, ten years of age. She was first seen March 4, 1892. Referred by Dr. F. B. Harrington (to Dr. Cheney). She has always had headaches, and more or less pain in eyes. For last two months head has ached most of time, severe, and often accompanied by nausea and vomiting. The eyes have also ached more of late; she cannot read more than ten or fifteen minutes at a time, and has been obliged to give up school. Is very apt to be dizzy when she first gets up in the morning. An examination under homatropine gave the following result: V. O. D. with $+.50 \bigcirc +.25$ cyl. axis $90° = \frac{1}{1}\frac{0}{2}$, V. O. S. with $+.50 \bigcirc +.25$ cyl. axis $90° = \frac{1}{1}\frac{0}{2}$. No insufficiency, or other abnormal condition of eyes. Glasses were prescribed for constant use, $+.25 \bigcirc +.25$ cyl. axis 90°. She reported three weeks later; and the mother stated that she had been perfectly free from headaches since using glasses, with the exception of one day when she had been without them (they were broken, and taken for repairs), and had returned to school. On the day that she was without the glasses, she had a severe headache, with nausea and vomiting.

Further comment on these two cases is unnecessary, beyond the observation that they are far from rare, and illustrate a not uncommon type in the practice of those members of the profession who are on the lookout for this factor in the etiology of cephalalgia.

Among the less common nervous disorders which have been discussed in connection with eye-strain are those evidenced by increased motor irritability, mental derangement, and disturbances of general nutrition. Most prominent among which may be mentioned facial spasm, chorea, epilepsy, melancholia, dyspepsia and

allied conditions. It may be mentioned, incidentally, that while dwelt upon in various monographs, in the text-books, with the exception of Ranny, little if anything will be found under any of these headings concerning ocular troubles in the etiology, however complete and exhaustive the enumeration may be in other respects. In fact, all conceivable possibilities swell the list of etiological factors mentioned in text-books on nervous diseases, more than in any other branch of medicine perhaps, partly on account of their insidious onset, and partly through our incomplete knowledge of their nature.

Whatever changes may be made in modern neurology through recent investigations, it is rare that a factor which has once figured in etiology is dropped from the list. On looking through the most advanced text-books, for example, we find exposure to cold as a cause of most obscure, as well as of many of the common nervous disturbances, whether peripheral, spinal, or cerebral; and traumatism, in the form even of slight blows or falls, figures constantly, and often with little reason. Sexual excess and masturbation are only of late years beginning to disappear as almost universal causes of neurological diseases. A single reported observation of sequence in disease seems sufficient to give rise to an accredited factor in etiology. It seems, therefore, remarkable that eye-strain should have been so systematically ignored.

Taking first the subject of facial spasm. This disorder is justly described as usually starting in or about the eyelids, the upper lid being most frequently first attacked; the spasm either resting there or spreading to contiguous muscles. It would seem that the location alone should call special attention to the eye. The reasons mentioned in the text-books, however, are the classical exposure to cold, otitis, caries of the teeth,

intestinal irritation (worms), uterine irritation, emotional disurbances, and finally irritations of the *eyeball* or *conjunctiva*. Gowers states that the trouble comes on gradually between thirty and sixty, rarely between twenty and thirty or after sixty. Its period of activity being somewhat similar to that of migraine, except that its onset and departure are decidedly later. In point of fact, it is probable that eye-strain as a cause of these symptoms, more especially the palpebral form, so far preponderates as to deserve the first mention in causation and to point to the first indication in treatment. A single instance will illustrate this point. A sufferer from astigmatism, aged thirty-eight, has complained of migraine since childhood, but this symptom has been kept under control since he put on glasses at the age of twenty-one. An occasional mild attack only occurs on the right side, the side upon which the refraction has not been perfectly corrected. Of late years he has been troubled frequently by nictatory spasm of the right eyelid, so severe at times as to materially interfere with the use of the eyes in reading or writing. On one occasion, having been free from the spasm for twenty-four hours, it appeared immediately upon an attempt to look fixedly at the "Green's lines," and continued with considerable frequency for several hours. He has noticed himself that the symptom comes on during the use of the eye only. It has never appeared in the left eyelid. Such cases appear so much more frequently in eye clinics than elsewhere, that the oculists have learned to associate the symptom with ocular defects more readily, perhaps, than neurologists and other practitioners. We have both seen a number of cases in which the side of spasm coincided with the refractive error, and in which glasses afforded the only improvement worthy of note. Some of these cases are, however, most intractable; the spasm continuing

perhaps with but slightly decreased intensity for months or years, in spite of the fact that the ocular defect has been fully corrected. In such cases the trouble usually is of long duration, and a much more satisfactory result is to be expected when the correction is made before it has become well established. Intractable as this symptom often is, even to appropriate treatment, it is still more so to other efforts; and it is fairly regarded as among the most obstinate of nervous symptoms. Even section or stretching of the facial nerve causes cessation only so long as paralysis lasts, for which reason this procedure has been practically discarded. The spontaneous disappearance of facial spasm at the age of sixty, or thereabout is probably due to the loss of accommodative power, and resulting eye-strain; the symptom disappearing gradually, though often persisting for some time after the cessation of the exciting cause. It is, of course, only to the so-called idiopathic forms of facial spasm that we refer, as undoubtedly certain cases depend on organic foci of irritation in the central nervous system. Certain of the idiopathic cases arise also from reflex irritation in other localities, as the ear or the teeth. Such cases we believe to be, however, far less in number than those due to eye-strain. Somewhat allied, perhaps, to this symptom is the so-called habit chorea of children. The dissimilarity lies in the nature of the movements, and in the degree to which they are under the patient's control. In this affection the eyes are sometimes squinted, sometimes widely opened; the brows are corrugated or elevated; the mouth and face twisted, and various grimaces produced apparently by an almost incontrollable impulse. This affection is far more common in childhood than in adult life, the desire being perhaps often present in adult life, but the inhibitory power more developed.

The following case, which may be classed in this category, has been previously reported by one of the writers[3] in connection with other cases of chorea (Case IX) subjected to ocular treatment, and is again mentioned for the reason that the improvement was very decided, and when heard from, two years after, there had been, with the exception of occasional slight twitchings of the lids, no return of the choreic symptoms. The patient was a boy of twelve years of age, and was first seen September 23, 1889. There was a history of one previous attack of about two years' duration, when the muscles of eye, eyelids and face were principally affected. This attack, which was severe, began about seven months before and involved muscles around eyes, of face, arms and legs. There was an esophoria of six degrees, and its correction was followed by a rapid improvement; the twitchings having almost entirely ceased two weeks after the last operation.

It is hard to decide how important an etiological factor eye-strain is in true chorea; but it is very doubtful if it deserves the prominence given it by Stevens, whose work in this direction is well known. The marked improvement and rapid recovery following the correction of ocular defects in a number of these cases reported in the paper previously referred to, would certainly indicate the advisibility of correcting such defects when they exist. The fact that patients not infrequently recover from this disease while undergoing no treatment whatever, is to be taken into consideration in forming conclusions as to the value of ocular treatment, as the following case, previously reported (Case VII), will serve to illustrate.

The patient, a girl of eleven years of age, was first seen September 10, 1889. The chorea was of about

[3] Cheney: Boston Medical and Surgical Journal, February 25, 1890.

eight weeks' duration and of considerable severity. There was a history of three previous attacks, the time of occurrence and duration unknown. The twitchings were confined entirely to the right side, and did not involve muscles around eyes or of face. The eyes never ached, and the vision was good. Headaches were frequent and severe. The correction of a moderate amount of hypermetropia was without benefit, and the twitching gradually became more severe. There was an esophoria of about four degrees. The improvement following the correction of this condition by two partial tenotomies was most satisfactory, the choreic movements having almost entirely ceased within a few days after the last operation. The patient returned about two years later, with a fifth attack of about three weeks' duration. The eyes were examined a number of times, but no insufficiency could be detected. Glasses correcting the hypermetropia were again prescribed, but did not prove of the least benefit, and the choreic symptoms gradually increased in severity. It is reasonable to presume therefore that eye-strain was not as important a factor in this case, as the previous rapid recovery may have led us to believe.

Another case (XI), seen about one year after it was reported, is of interest for the reason that there was no noticeable change in the patient's condition after the correction of a refractive error, while the subsequent history would indicate that it had been of some value. The patient was a boy eight years of age; first seen October 11, 1889. There was a history of one previous attack five years before. When seen, this second attack was of about three weeks' duration. It was of moderate severity, and involved both upper and lower extremities. There were no twitchings of the muscles of eyes or face, no pain in eyes, but occasional headaches. He was found to have a hypermetropia of

2.25° in either eye, and was ordered correcting glasses for constant use. At the end of three weeks, there being no improvement in the chorea, he was referred back to the nervous department for general treatment; advice being given, however, to continue using the glasses. When again seen, August 6, 1890, he reported that he had worn the glasses constantly, until about a month before, when he had broken them. He had had slight twitchings for the last two or three weeks. These ceased in a short time after he had obtained new glasses; and so far as known there has been no return of the trouble.

The status of epilepsy in this connection is probably quite analogous to that of chorea. That genuine epilepsy can be produced by eye-strain is, to say the least, extremely doubtful. On the other hand, there is reason to suppose that eye-strain may act here as a source of irritation in precipitating the trouble in a nervous system already predisposed, either by inheritance or otherwise, to this affection; and that the relief of this condition, may, in some cases, result in a cessation of the attack for an indefinite period. It seems reasonable to expect, however, that the disease will sooner or later manifest itself with the development of some new source of irritation, physical or mental, and it is therefore unwise to regard such cases as cured or cease to be on the lookout for other possible exciting causes, even should the patient be free from the attacks for years.

The following case has been under the care of Dr. Walton for a number of years, and is certainly of interest in this connection. The patient is a young man, eighteen years of age, and had typical epileptic attacks. No family history; no trauma or other definite cause. First attack in January, 1887. Attacks followed with varying frequency; five in 1887; six in 1888; nine

during January, February, March and April of 1889. During this time he had been upon varying doses of the bromides and following general directions as to diet, as directed by the various specialists who had been consulted. Soon after he came under Dr. Walton's care, in the spring of 1889, his refractive error was corrected by Dr. Bradford, after which a period of sixteen months elapsed without an attack; the bromide being continued at a moderate dose, averaging about twenty grains, gradually diminishing towards the end of that time. At the end of this period the attacks recurred, and have persisted with varying frequency up to the present time, though the dose of bromide has been increased as far as seemed advisable. The family are so far convinced that ocular defect has a bearing on the case, that they have now placed him, on their own responsibility, under the care of Dr. Stevens, who has operated a number of times upon the muscles, in what manner or with what result we do not as yet know.

Another case under the care of Dr. Cheney may also be mentioned. Mrs. C. J., forty-six years of age, a native of New Hampshire, was seen for the first time October 20, 1889. The history obtained is as follows: The first attack was some time in February of the preceding year. They had increased in frequency, and for a number of months past she has averaged one a month. The eyes never ache. She can see perfectly well for distance and near; and has not felt the need of glasses. The head never aches, but sometimes feels tired. She is very sceptical as regards the value of eye-treatment in a disease of this nature, and only submits to it after considerable urging from her physician. The vision of the right eye was normal, while that of the left was a little less than normal. When requested to read the same letters a second time, she was una-

ble to do so, the sight becoming blurred after she had looked at them for a minute. She was found to have astigmatism, the correction in the right eye being +.50 cyl. axis 15° and the left +1 cyl. axis 165°. There was a slight esophoria, ½°. The adduction was 15°, the abduction 7°, and a prism of 4° could be overcome with its base up or down. Sn. 0.5 could be read at 22 cm., but quickly blurred. Glasses correcting the astigmatism were ordered for distance, and the same combined with +1 sph., for near. She was again seen November 26, 1889. She had had one attack soon after getting glasses, but not so severe as usual. Says she did not realize how much her head had troubled her until she experienced relief from the glasses. She was advised to have a second examination under homatropine, and it was made December 2d, with the following result: V. O. D. with +1.75 ⊂ +.50 cyl. axis 15° = 1, V. O. S. with +1.75 ⊂ +1 cyl. axis 165° = 1. When examined two days later, she would accept but +.75 sph.; and this, combined with the cylinders, was ordered for distance. January 29, 1890, she reported that she had not had an attack for nearly three months. The near glasses were now ordered for distance, and +1.50 sph., with cylinders, for near. Early in the spring she went to Europe, and has not yet returned. In June, 1890, she had an attack, the first in seven months. The eyes and head began to trouble her again at about this time, and she consulted a German oculist, who prescribed the following glasses: for the right eye, +.50 sph., and for the left, +.50 cyl. axis 90°. A mydriatic was not used. She has had nervous prostration for some time past. Whether or no there have been other epileptic attacks, we are unable to learn. The glasses last prescribed left so much of the refractive error uncorrected that, if eye-strain was an important factor in the case, a

relief of the symptom from their use could hardly be expected.

The question of the relief of mental symptoms by the correction of ocular defects is one involving too many factors, perhaps, to be decided upon the limited experience at hand. While the subject of headaches has been under consideration for a long time, the influence of continued eye-strain upon the mental processes has been drawn to our attention only within comparatively recent years. From an *a priori* point of view, however, it would seem reasonable to expect that the higher cerebral processes, depending, as they do, upon an infinite number of factors, and liable to impairment by a wide range of detrimental influences, including both external surroundings and subjective states, should be affected unfavorably by a drain upon the nervous system, which is often continuous during the waking hours. The fact is certainly well recognized that all continuous strains, whether from worry, business cares, prolonged application, or physical exhaustion, exercise a deleterious influence upon the emotional, if not upon the intellectual character of the individual. If, therefore, it is an established fact that all such injurious elements should be removed from the lives of sufferers from mental disturbances, the factor under consideration can hardly be neglected. It would be, on the other hand, too sanguine to expect prompt improvement in every case from the removal of this one source of irritation. A sufficient number of cases have been observed to justify the simple procedure of correcting ocular defects in this class of patients, however, and, in fact, in certain cases the improvement has been shown so speedy and decided as almost to warrant the belief that the eye-strain was the important factor in causation. One case, an inmate of the McLean Asylum, is of especial interest; and we are

indebted to Dr. J. T. Tuttle for his kindness in sending us the following history:

Mrs. S. M. B., admitted to the asylum April 9, 1886, then thirty-three years of age. No hereditary insanity. Well before marriage and for a number of years after. From overwork, care and anxiety, had been growing more and more neurasthenic for five years, with increasing loss of self-control, hysterical attacks, and impulses to injure others, especially her child and husband. Whatever of melancholia there was in her case was due to her appreciation of her condition. Up to December, 1889, there was a slow but gradual loss in bodily condition and in self-control. The history is full of accounts of hysterical attacks (sometimes convulsions), when she would be noisy, scream, attack the nurse, for whom she ordinarily had a great regard, etc. During the year previous to December, 1889, she was too much exhausted to make great disturbances, as, for the most part of the time, she was in bed, getting up only often enough to have it made. Weight had fallen off from 130 lbs. to 98 lbs. At times she would be very discouraged and talk of suicide. Had what she called "sinking spells," when she was apparently (but not really) unconscious. She had all sorts of abnormal sensations. "Dreadful feelings," top of head, pressure, etc. This pressure on the vertex was quite sure to precede a hysterical attack. She had always been near-sighted but never had worn glasses; "eyesight will leave temporarily and feels as if in trance spells." Complained also of "weakness of vision." Objects sometimes appeared yellow when seen with right eye; also "clump of sparks" appeared in it. Later, saw green and white spots on the ceiling. Sometimes a red or black spot on ceiling had a halo about it. About January, 1890, after having had the long rest (for a year a pretty complete one) she began to gain in

weight and slightly in strength. Weight ran up to 170½ lbs. by February 1, 1891; but all through the year she was in bed, and had "sinking spells" frequently; headaches and abnormal sensations that neurasthenics have. During the summer of 1890 she was on a cot on the veranda for an hour or two for a few days, and then would not go out for a week. She was very easily exhausted; could not have people talk to her; could not read; could not see distant objects clearly. Had no way of getting new ideas and was greatly discouraged and depressed, so that she did not gain strength along with the fat. Was in this condition when seen by Dr. Cheney, February 3, 1891. Again seen by Dr. Cheney, March 12th. Distance glasses were obtained a few days later. They gave her great comfort and enlarged her horizon. She could see objects and people clearly, and it did not tire her to use her eyes as before. The result was, that, instead of lying in bed most of the time with her eyes closed, she began to sit up more and go out in the ward. As soon as warmer weather came, she was on the veranda most of the day, in pleasant weather. The glasses for reading were obtained a short time after the others, and during the summer she read the papers and books. All this was curative, as it gave her new ideas and took her mind off herself. She improved so much that she left the asylum, October 14, 1891, in a very comfortable condition, not well, but able to live outside a hospital. In conclusion, Dr. Tuttle expresses the opinion — and the same view is, we think, held by Dr. Cowles — that the patient would have been in the asylum to-day had it not been for the glasses. The ocular condition was, briefly, as follows: There was a myopia of about seven dioptres in either eye; and, when this was corrected, the patient's distant vision was nearly up to the normal. The eye seemed to be

perfectly straight, and to move freely in all directions; but, after looking steadily at an object for a short time, the right eye would converge, and she would see double. On questioning, it was found that this double vision occurred quite often. A weak prism, 2°, base in, gave continuous diplopia. Glasses correcting the myopia were prescribed for distance, combined with a 3° prism, base out, before either eye; and the same degree prism, with weaker myopic glasses, were ordered for reading and other near work. The opinion expressed by Dr. Tuttle, that ability to see objects clearly, use the eyes in reading, etc., was curative, in that it gave her new ideas, and took her mind off herself, is undoubtedly a correct one; but, back of this, the primary and important factor was, it seems to us, the relief given the weakened external recti muscles by prisms. When it is remembered that the presence of so marked an insufficiency means a constant tendency to see double, and that single vision is only maintained with the greatest effort, it is not difficult to believe that such an exhaustive strain, continuing day after day, probably for a number of years, is capable of producing in a person of neurotic temperament, the most serious mental disturbances.

In another case, one of melancholia, while we would not venture to assume that an ocular defect was the main cause, or that its treatment deserved sole credit for the improvement (which might in fact, perhaps, have appeared under no treatment whatever), we feel confident that the correction of the refractive error played a certain part. The patient was a business man, twenty-eight years of age. Has not been himself for a number of years, since an attack of "catarrh of the stomach," considered due to smoking. He was, however, fairly well a year and a half ago, when he was still using tobacco freely. This he discontinued a

year ago, on reappearance of symptoms; but took it up shortly after improving. At about this time the trouble took the form of a restless melancholia. He was unable to sleep, and it was with difficulty that he continued his work. He was so seriously depressed at the time he came under observation as to be incapacitated for work; unable to sleep or to take interest in society, which he avoided. His family were considerably alarmed, and his business associates doubtful if he would be able to go on. There were no symptoms referable to the eyes, except at times a slight blur. There were no definite signs of neuritis, no tenderness, though he complained at times of an abdominal lameness and backache, together with a sensitiveness to heat and cold. He complained of frontal headache. He improved somewhat under tonic treatment and abstinence from tobacco. An examination of the eyes was made November 29, 1891, under homatropine, when he was found to have a quarter of a dioptre of hypermetropic astigmatism axis zero in either eye. and glasses correcting this trouble were ordered for constant use. From this time onward the improvement was rapid and steady; and after a short trip, he was able to return to business with his old ambition and efficiency. He reports well five months later. Still at work, and no recurrence of headache or other symptoms.

There is one more point that we wish to allude to briefly, and that is, the very marked improvement in a patient's general physical and mental condition often following the correction of some ocular defect. Relief from eye-strain — as would relief from any other abnormal condition, acting as a constant irritant — in certain individuals, causes them to become less nervous and irritable. They sleep better, the appetite is improved; and, as a result, they gain in strength and

flesh, and feel better in every way. The case of a child, a girl nine years of age, who was first seen February 7, 1891, may be mentioned in this connection, the history being briefly as follows: She has been near-sighted for three or four months, and the eyes have ached considerably. The head never aches. She has always been extremely nervous, but has never had any serious nervous trouble. Of late, has very fickle appetite; does not sleep well, and worries a good deal about her studies. She is ambitious to rank high in her school work, and studies more out of school hours than the average child of her age. Upon examination, she was found to be rather poorly nourished, pale and sallow, and gave every indication of being extremely neurotic in temperament. The eyes were slightly injected and watery. There was considerable twitching of the lids, and when she looked intently at anything they were partially closed. The vision was four-tenths of the normal in either eye, and was not improved with glasses. Sn. 0.5 could not be read beyond 20 cm. There was no change in the fundus or transparent media, and it seemed probable that the condition was spasm of the accommodation caused by some refractive error. Homatropine was prescribed, and a second examination made two days later with the following result: V. O. D. with $+.25$ cyl. axis $0° = 1$, V. O. S. with $+.25$ cyl. axis $0° = 1$. Glasses correcting the astigmatism were prescribed for constant use. When she returned, a month later, the improvement in her condition was very decided. There was no twitching of the lids; the eyes were kept well opened; and she had been perfectly free from pain. She was much less nervous; slept well; the appetite had improved; her color was better; and she had gained a number of pounds in weight. She was again seen six months later, when her general condition was found to be still further improved.

In conclusion, it would seem from our experience, coupled with that of previous observers, that the examination of no case of functional nervous disorder should be considered complete until we have assured ourselves of the ocular condition, whether defective vision is present or not, and have corrected refractive errors, if present, even though small in amount. This step should certainly not be neglected in intractable cases. With regard to specific forms; headache offers the most fertile field for practical results of treatment. Facial spasm (except early in its onset), epilepsy and chorea offer less hope of definite benefit, though indications point to the removal of ocular defects as being the most common cause in the former, and one of the various irritating factors in the latter, which exercises a deleterious effect upon a nervous system already predisposed. In cases of mental disorders without organic basis, of general nervous weakness and irritability (neurasthenia) and obscure cases of defective nutrition, it can never be out of place to correct exciting refractive or muscular defects, and results may follow which few would venture to predict.