

should not consider he has confounded meningitis with typhoid fever.

*Case 2.*—R. H. S., age 28, of Clifton Forge, Va., was sent to me by his physician on April 24, 1893, for treatment of his eyes which had become defective during an attack of typhoid fever, commencing July 4, 1892, and from which he did not fully recover until October, 1892, nearly four months. His sight continued to grow worse in spite of his steady improvement in general health. When I first saw him, both optic nerves showed decided atrophy of the discs. His vision was right 5-200, left  $\frac{1}{2}$  200. I put him on strychnia sulph. and dil. phosphoric acid, grains two to the ounce. He commenced with 10 drops of this mixture after meals, and increased one drop each dose without showing any toxic symptoms until he was taking 52 drops, or one-fifth of a grain of sulphate of strychnia at a dose. On May 4 vision was, right, 12-200, left 5-200; May 10, right 14-200, left 12-200; May 13, right 16-200, left 14-200; May 18, right 20-200, left 17-200, which indicated a steady improvement, as the right eye had four times as much vision and the left thirty-four times as much as at the first examination three weeks previously. The type was changed at each examination so that he could not bring his memory to aid his sight and give false results. When he reached the dose of one-fifth of a grain three times daily he showed decided toxic symptoms, when it was reduced to one-seventh of a grain, and he still continues the treatment.

The case is interesting, both as one of white atrophy following typhoid fever (originating probably as neuritis or papillitis), and as a case of atrophy that made steady improvement under treatment, although he had been nearly blind several months.

*Case 3.*—Nellie Kilmartin, age three and a half years, was sent to me October 11 by Dr. John Herbert Claiborne, Petersburg, Va. She was perfectly blind in both eyes, could not distinguish a bright electric light in a dark room. The right optic nerve was slightly blurred in outline and decidedly pale; the left gave a perfect picture of neuritis descendens. She had been sick two or three weeks with fever closely resembling remittent, supposed to be of malarial origin. She was given 2 to 3 grains of quinin daily for three or four days until she had taken 40 grains in all. She complained of some headache and said her eyes hurt her, but had no signs of meningitis. I put her on iodid of potash in gradually increasing doses until she showed its physiological effects and then added strychnia and dil. phosphoric acid to the treatment. She was brought to me regularly about once a week until the end of December. After the first week she began to see light and from that time steadily improved. I saw her the latter part of February, 1893, and her sight was perfectly restored, both optic nerves being normal.

This case of neuritis I attributed to malarial poisoning, as I thought the others due to the pathological alterations attendant upon typhoid fever, on the grounds above given. I have no comments to make and simply submit them for discussion.

*NOTE.*—Dr. Oliver has since written referring me to his articles in Vol. IV of Keating's Cyclopaedia, and Vol. II of Burnett's System of Diseases of the Ear, Throat and Nose, for his views on this subject.

*DR. DE SCHWEINITZ.*—When I wrote to Dr. White concerning his experience with optic nerve atrophy in fever, I was under the impression that he wished data only in so far as typhoid fever was concerned. I was not aware that the Doctor intended to cover a more extensive ground; otherwise I might have added other cases to those which I had reported. I indorse thoroughly Dr. White's use of strychnia in optic nerve atrophy, especially its use in full physiological doses, believing that by these alone good results are produced, while practically no effect is achieved by the ordinary doses which are administered. In discussing blindness after fevers it was very essential to eliminate the possible influence of quinin, which I have no doubt Dr. White has done in his case, and which, indeed, was practically excluded by the exceeding smallness of the dose.

Nevertheless, small doses of quinin in patients exhibiting idiosyncrasies are quite capable of producing blindness. I have seen temporary amaurosis follow the administration of 15 grains of quinin in divided doses during twenty-four hours, and Dr. Horatio Wood of Philadelphia, has reported a like result after the exhibition of 12 grains.

*DR. WHITE.*—Dr. de Schweinitz seems to think that there was a possibility of this case being blind from the use of quinin, a thing which I carefully considered before attributing the blindness to optic nerve trouble caused by the fever. I have never seen as little as 2 grains of quinin at a dose produce blindness. Two or three grains daily until she had taken 10 grains would hardly have been sufficient to produce an effect like this. I have seen cases where blindness was apparently produced by malarial influence before quinin was given. These cases usually recover.

## ECCENTRIC POSES OF THE HEAD.

Read in the Section on Ophthalmology at the Forty-fourth Annual Meeting of the American Medical Association.

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In the following paper I wish to call attention to a few cases illustrating a large class of malpositions and eccentric poses of the head, due to lack of equilibrium between the motor muscles of the eyes. These malpositions are assumed by the patients, either to prevent diplopia in paralysis, or to relieve the strain put upon weak or illy balanced muscles. Such cases are frequently referred to the orthopedic or general surgeon as wry-neck or spinal curvature, and in a case now under my care, an operation upon the neck muscles was seriously considered for the relief of an eccentric pose, due to insufficiency of the right exterior and superior recti.

*Case No. 1.*—Patrick K., strong, well built, and despite his defective eyes, well educated, applied to me in July, 1887, for a correction which I found to = O. C. + 3. G. S. + 1.25 cyl. ax. 90. V. = 20-30. He carried his head thrown back, mouth partially open and nostrils dilated, thus presenting a most ungainly and unprepossessing appearance. In this, the habitual pose of the head, he had binocular vision and had experienced no inconvenience except that attributable to ametropia. With head erect and in the normal position he suffered annoying diplopia, vertigo, and after a brief enforcement of this pose a severe headache with nausea. The muscle test with prisms, head in normal position, gave a constant right cataphoria 15 degrees, exophoria 10 degrees. There was no evidence of ptosis. Repeated examinations giving about the same result, I made an advancement of the superior rectus of the right eye and a tenotomy of the opposing muscle. Two months later we found that he carried his head in almost the normal position, and when reduced to the normal manifested 2 degrees of hyperphoria. This was corrected by a tenotomy of the superior rectus of the right eye, leaving an exophoria = 2° with abduction = 10° = adduction = 20°.

As the patient now maintained his head in the normal position and complained of no asthenopia, I advised him to return in a year, or sooner if he experienced annoyance. Almost two years elapsed, however, before his return, and upon re-examination I found no exophoria, asthenopia or any symptoms that could be attributed to his eyes, both pose and movement of the head being normal.

Still another case involves about the same muscle condition, but in addition to the pose of the head the patient was subject to epileptiform attacks, occurring one in two or three days. History as follows:

*Case No. 2.*—Mary R., age 15 years, strong, well developed, and in good health but r the fits to which she was subject.

The patient rarely attempted to pose the head in a normal position, always complaining of vertigo when attempting to do so. The only way in which it could be avoided was to throw the head far backward. In this position she could see objects on the horizon line without other annoyance than that due to the position of the head. When the head was firmly held in the normal position, and the eyes were directed to the horizon line, there was found to be right-hypo-exophoria, i. e., the right eye was directed down and outward. Under atropin vision = 20-80, which was corrected by +1 D. In order to correct the muscle error, the right superior rectus was advanced and a guarded tenotomy made upon the inferior rectus. Later, the right externus was cut and the internus advanced. In about two months after the first operation the head could be carried constantly in the normal position, and the eyes soon gained the normal freedom of movement. There still remained a tendency outward of 3 degrees which was not corrected. About a year later, and following the first menstruation the epileptiform attacks ceased.

Another type of malposition sometimes obtains in patients afflicted with esophoria or exophoria. A case evincing this occurred in a lad of 14, in good general health, and who presented no nervous or other symptoms of disease; the left side of the face, however, was illy developed. He habitually inclined his head to the right with a disposition to open the mouth unsymmetrically, the left angle being more obtuse. The eyes were directed strongly to the left; in this position vision was 20-20 and binocular. The head placed in the normal pose gave an exophoria =  $15^{\circ}$  to  $= 20^{\circ}$ , adduction = 0, abduction =  $25^{\circ}$  test with prisms in appropriate position. The image was inconstant.

I made double tenotomies of the externi and advanced the internal rectus of the left eye. Five days after the operation the exophoria =  $5^{\circ}$  remained constant and two months later I again tenotomized the left external rectus obtaining 1 degree of esophoria. The patient was discharged with directions to return in three months at least, and sooner if further annoyance was experienced. Subsequent examination, head held in normal position, gave no evidence of heterophoria.

Still another form of malposition gives its unfortunate possessor a decidedly repulsive aspect. The head is bent forward, the chin is markedly retracted and the features often mold themselves into an uncanny grimace. These patients have binocular vision with the head in the above described position, but directly the head is adjusted to the normal pose a heterophoria is manifested. Young patients frequently struggle violently to resume the malposition.

*Case No. 3.*—G. K., age 17 years, maintained his head in this distressing posture, displayed an awkward staggering gait, nervous and illy coördinated movements of the head and body. V.=20-60, hyperopia = + 2.50 D. O. S. hyperphoria = 3 degrees, esophoria = 10 degrees (adduction 40 degrees, abduction 0 degrees). He was given a full correction. There was no improvement in position or coördination, therefore I concluded to correct the left hyperopia. This was done by graduated tenotomy and advancement respectively of the superior and inferior recti in the right eye. Two weeks later as there still remained 10 degrees of esophoria I made a double guarded tenotomy of both internal recti resulting in an esophoria of 1 degree.

Much difficulty was experienced in compelling patient to maintain the normal pose of the head, but in an exceedingly brief space of time his gait, appearance and manner of speech were much improved. Four months later as some esophoria still persisted, I again tenotomized and fully corrected the error. This patient was particularly unfortunate in his infirmity, as from early childhood he had been exceedingly sensitive regarding his appearance,

and greatly mortified that even under the instruction of the best masters, he had been unable to amend for any appreciable length of time his noticeably eccentric attitude. The correction operations effected such a surprising transformation, that after an absence of some months from his family they were enabled to recognize him only by his voice. I have never seen so complete a metamorphosis in one's appearance as he underwent. I regret that I am not allowed to present photographs. In order to give an idea of the full extent of the affliction, these patients must be seen while moving about and not aware that they are observed.

In these cases there may never be a history of strabismus; the patient from early childhood adjusts the head to the position best calculated to avoid diplopia, and frequently there is no history of asthenopia or any symptom that could be classed as neurasthenic.

Still another modification of this form may obtain where it is not a question of double vision, but of muscle deviation involving both superior recti and not uncommonly the levator palpebrarum, and more or less stenosis of the aperture. Such cases demand tenotomy of the inferior and advancement of the superior recti and levator palpebrarum, and a free canthoplasty to correct the malposition. Canthoplasty, advancement of the levator palpebrarum, tenotomy and advancement of recti muscles all can be accomplished in the above mentioned routine at a sitting; still I consider a more preferable method includes the canthoplasty and advancement of the levator in a first operation, and some weeks later, the operation upon the ocular muscles proper, as the correction of the ptosis and aperture may, in a degree, modify the operation for the recti muscles.

These are typical cases and subject to many modifications; in none of them did I find a history of nervous disturbance occurring at any time. The only symptoms simulating the latter condition were the tendency to incoördination, grimacing and awkward posing of the body. It requires great patience, some tact and a thorough study of the conditions governing these cases to properly correct such errors. From these causes of malposition must be eliminated maladjustments of the neck muscles, deformities of, and injuries of the head.

*A Case of Malposition following an unguarded complete tenotomy.*—Chas. T., 15 years of age had been operated on for strabismus four years previously, and judging from my knowledge of the operator's work, there had been performed a complete unguarded tenotomy and no examination made to correct an existing hyperopia. The left eye was directed out with slight tendency downward, the right followed, and binocular vision was secured by posing the head backward and to the right. The movement of the left eye was limited toward the nasal side allowing but two milliamperes, from median line in that direction. When the head was forced into the normal position the right eye was five milliamperes above its fellow. An examination of the cicatrix showed broad and extensive adhesions. After staining with India ink the sclero-corneal junction to mark the normal position of the muscle, I made an incision and found the muscle attached below the equator of the eye and quite far back. Advancing and raising the muscle to its normal position, I secured it by a double armed suture. After recovery from the operation the patient was ordered to use his full correction under atropia, and to return in six weeks. Upon his return 4 degrees exophoria persisted; we tenotomized the external rectus; this fully corrected the error and head and eyes resumed their normal position. These cases are not so infrequent following the old operation for strabismus.

*Malposition due to partial paralysis of the recti mus-*

cles allowing the eye to move only to the median line and fixed for a definite distance.—This form of anomaly is one of the most annoying with which we have to deal. There is no position in which the head can be placed to secure uncomplicated proximal vision. This is especially distressing if the patient be so unfortunate as to be unable to suppress the image of error.

*Case No. 4.*—Mrs. H., age 23, had homonymous strabismus with fusion at 2 mm. pose of the head to the left or right, head in normal position, at 20 feet, esophoria =  $15^{\circ}$ , adduction =  $40^{\circ}$ , abduction =  $0^{\circ}$ ; movement of the eyes limited to median line; left eye no power of abduction; vision 20-30, under atropin + 75 O. D. and O. S. gave 20-20.

At the request of our patient we tried everything adapted to correct such errors; galvanism, faradism, massage, stretching, etc., of the externi muscle, in the endeavor to tone and stimulate the interni preparatory to tenotomy and advancement. Three months of unremitting effort secured an abduction of  $+30^{\circ}$ ; a guarded tenotomy and advancement gave adduction  $30^{\circ}$  abduction  $2^{\circ}$  with normal position of the head, and freedom from a constant vision of the nose. Abduction continued below normal, but for central and proximal vision there was no annoyance. In this case I advanced the external rectus of the left eye and made two tenotomies on each of the internal recti at different times before I secured central remote fusion.

This patient has lately called upon me again, complaining of severe pain in the right eye, following every attempt to move the eye even to the median line. Muscle tests showed that there was an esophoria, or tendency of the visual lines inward equal to 8 degrees; but the total displacement inward (Landolt perimeter test) was, right eye fixing, left eye tended in 12 degrees, showing a tendency to pose the head slightly to the right in attempting to look at objects either at a proximal or remote point. As the patient would not adjust herself to the abnormal relation existing between the eyes, and I could not persuade her to wear prisms, I corrected by making a guarded tenotomy upon the right internus, resulting ten days later in a remote and proximal fixation in the normal position without painful effort. I presume it may be best, somewhat later, to correct the displacement in the left eye, making a guarded tenotomy, however; this I should not suggest to the patient unless she complains of further pain.

The method which I adopt in all cases of asthenopia has been strictly followed in the management of these cases. I first attend to the correction of errors of refraction; then after a sufficient time has elapsed the correction of the muscle condition is carefully considered. I prefer the Stevens phorometer for low degrees of heterophoria, using the Maddox rod, and divide prism, etc., as aids in measuring the error and educating the muscles. As to the technique of operations for tenotomy and advancement, I have but little to offer that is new, and nothing purely original.

In the guarded tenotomy which I now make for the relief of very low degrees of heterophoria, I follow the plan suggested by Dr. Stevens or Noyes, also Stevens advancement in errors of low degree, with the exception that I use a broader divulser to separate more thoroughly the numerous bands of attachment between the tendon and the ocular walls, as this latter condition may prevent the lengthening of the muscle and render imperative the tenotomy. To attain the maximum effect of a complete tenotomy without danger of displacing the tendon, and to regulate the position of the future attachment I proceed as follows:

Enter the conjunctiva just above the lower border

of the muscle to be receded, separate the capsule and tendon from the conjunctiva, grasp the center of the tendon with the forceps and proceed as in graduated tenotomy; grasp the center of the cut tendon with broad fixation forceps and introduce the needles of a double armed suture; draw them through, transfix the conjunctiva as far back as you wish to displace the tendon, then bring them out through the conjunctiva; now complete the tenotomy, again using the divulser to separate the tendon from ocular walls; the suture is now drawn up and tied, but not too tightly. Should the conjunctiva wound gape, close it with a light suture. This operation secures both maximum effect and proper attachment.

I have found it necessary, preliminary to operating for heterophoria, to make a thorough study of both pose and movements of the patient before measuring the muscle error or in any way embarrassing them. The best plan is to draw their attention to books, curios, people, to distant buildings, meanwhile observing closely and making notes of all interesting deductions, remembering the general rule that, "the head moves in the opposite direction to the projection of the visual lines." A careful chart should be prepared and notes made of every operation and its results, for usually several cuttings must be made before a perfect orthophoric condition in the normal pose can be obtained. I have found it expedient to apprise my patients of this before commencing the operations. As we are able to do all of the surgical work under cocain anesthesia, much of the terror and all of the danger of tenotomy has been removed.

DR. GOULD—I have had two or three cases that somewhat resembled those reported by Dr. Colburn. One patient carried his head back in order to avoid double vision due to heterophoria. By carefully adjusting glasses, his muscles were strengthened so that he held his head in a normal position. One other patient had quite a distortion of his features, his forehead being wrinkled in concentric curves clear from his eye to the roots of his hair. It was very noticeable. After three months he was holding his head straight with the skin of his forehead nearly straightened out. I had still another case somewhat similar to this one.

DR. JACKSON—I think that the class of cases to which Dr. Colburn has called attention is a very important one; and one to which the attention of the profession needs to be more generally directed. I feel like taking exception, however, to his classing them as cases of heterophoria, if I heard some of them correctly. They are rather cases of paralytic squint in which it is impossible to obtain binocular vision in the central portion of the field of vision. I have seen quite a number of these cases; and have also seen the other cases, which could be classed as heterophoria because binocular vision could be obtained in all portions of the field of vision though only with undue effort. When Dr. Stevens gave us the new terms, the "phorias," I hoped that they would be applied only to cases of muscular error which correspond to concomitant squint; and that for these cases of special weakness in one muscle or group of muscles we might still use the very significant term, insufficiencies.

WHEN THE MERCURY WENT DOWN.—The *Chemist and Druggist* offers us the following: Mrs. Mulcahey: "Shure, docther, and is it thrue that little Jimmy O'Toole bit yoore termometry in two and swallowed the mercury?" Doctor: "Yes, my dear madam, it is, and the boy is dead." Mrs. M.: "Shure, docther, an' it were a cold day for Jimmy, poor bye, whin the mercury wint down." Doctor: "Yes, madam, he died by degrees."