friends, two attempts were made with emulsions of pumpkin seeds. In justice to all parties, it is proper to state that in every instance starvation and purgation with castor oil, castoria, etc., were rigidly enforced. This is confirmed by an incident in the history, when the little patient led his only sympathetic relative to the cupboard and with tears running down his cheeks exclaimed: "Grandpa, I'm so hungry! I'm so hungry!" Meanwhile, reports of the case had reached relatives in the East, who immediately sent out a quantity of pelletierine tannate, with assurances of success. Two trials of this specific (?) quickly followed bringing away a few feet of the worm as other remedies had done. A small dose of the pomegranate alkaloid remained, but in view of previous failures it had almost been decided to await the natural demise, or suicide (?) of the parasite at the end of four or five years.

The tenth and successful assault was reluctantly undertaken by the writer. Though I should have preferred kouso or koussin for a child, the remainder of the pelletierine was given.

Without special restrictions as to diet a full dose of jalap preceded the tæniacide about twelve hours, and was repeated next day an hour or two after the exhibition of the anthelmintic. After thoroughly scotching the parasite, indicated by the appearance of large segments in the dejections, frequent enemata of plain and salt water were employed. Traction upon the worm was interdicted, but rather it was advised to strap the protruding extremity to the nates and continue injections. At a later hour the head intact and erect with fifteen feet of the tænia gave assurance of its unconditional surrender after a siege of nearly twelve months.

CONJUGATE DEVIATION OF THE EYES WITH MIDDLE EAR SUPPURATION.

Read before the Chicago Medical Society, Jan. 8, 1894.

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Upon June 13 last, I was called in consultation to see the following case, on account of the serious symptoms which had supervened three days before. The history of the case was given as follows:

John W., aged 18, had a discharge from his left ear during childhood. This had ceased and remained well until the present attack. After having influenza seven weeks ago, a severe otitis media on the left side with profuse discharge followed. Under treatment he was progressing favorably until three days ago when he had chills, severe pain in left side of head, dizziness and vomiting, since which time his temperature has ranged from one-half to three-quarters of a degree above normal, but has not exceeded that at any time. It was also noticed that the discharge was less profuse.

Condition Present.—Patient very weak, perspiring freely. Temperature 99 degrees. Pulse 120. Dizziness so bad he could not stand or walk alone, having a tendency to fall to left side, and the dizziness did not entirely disappear upon lying down. Moving or rising from the bed was always followed by a spell of vomiting. Pain over left side of head. Mastoid process normal in appearance and only tender upon pressure at one point behind meatus, corresponding to the antrum. Meatus filled with thick creamy pus tinged with blood. After removing this, a polypus about the size of a pea was seen projecting through a perforation in the upper part of the membrana tympani and covering a small perforation in the lower part. After removing the polypus with a snare the openings seemed large enough to allow a free exit for the pus. Upon examining the eyes I found that the movement of both to the right was defective but could be overcome by an effort.

June 14. The patient felt somewhat better, pain in left side of head had disappeared and the dizziness and vomiting were less severe. Temperature normal. Pulse slower. The eye symptoms were more marked, as they were unsteady when looking directly in front and could only be moved to right of median line with difficulty. No diplopia. Slight paresis of left facial nerve, more marked at lower part of face.

June 15. Patient improving but still very weak and dizzy upon moving. Both eyes were strongly deviated to

the left side and could not be turned to right of median line. The impairment in movement was about equal in each eye when tested separately. There was no diplopia and none could be elicited by careful testing. Convergence seemed to be retained for objects when held to left side. Pupils normal in size and reaction. Vision was not perceptibly impaired. Field of vision normal. The paresis of left facial nerve had disappeared.

June 16. The condition of the eyes was the same as on previous day. Dizziness still continued but patient could walk without assistance. As the perforations did not allow a free flow of pus I enlarged the lower one by a horizontal incision.

The improvement continued and the dizziness and ocular symptoms gradually disappeared within a few days, so that when he called at my office, two weeks later, no trace of any ocular trouble could be seen. Vision was normal and movement of the eyes perfect. The discharge from the ear was less profuse.

The suppuration ceased about a month later, and nothing now remains of the ear trouble but a slight amount of deafness with tinnitus, the perforations having cicatrized.

The important question in the treatment of this case was the cause of the ocular symptoms. Were they due to an affection of the brain or the meninges, and if so, what was its nature; or were they only a reflex symptom from irritation of the auditory nerve? In favor of the former view were the severe general symptoms as the chills, fever, dizziness and vomiting; but considering the speedy termination of the symptoms after the local treatment and the peculiar muscular symptoms, I am of the opinion it was the latter.

In support of this view is the intimate connection of the auditory nerve with the nerves governing the movements of the eye, especially those of conjugate lateral movement. Associated lateral movement of the eyes is under the control of a single nucleus, that of the abducens or sixth nerve. This nucleus, besides supplying the external rectus of the same side, also sends fibers which, according to most authorities (Fuchs,¹ Morris²), join the third nerve of the opposite side and go directly to supply the external rectus or, as Gowers³ believes, go to the nucleus of that portion of the third nerve supplying the internal rectus. This innervation is separate from that governing convergence, which is supplied by the nucleus of the third nerve.

A connection of the auditory nerve and the nucleus of the abducens has been demonstrated anatomically. S. Freud⁴ describes a connection of the vestibular portion of the auditory nerve by curved fibers going directly to the nucleus of the abducens of the same side. Other authorities, as Politzer⁵ and Gowers, consider the superior olivary body as the center for reflex movements of the eye, as it receives fibers from the auditory nerve and is directly connected with the abducens nucleus.

To show the direct connection of the movements of the eyes with aural vertigo, a number of physiologic experiments have been performed. Cyon⁶ found that operation upon the semicircular canals of different animals gave different results. In rabbits they were manifested principally by movements of the eyes. He also found that they were not compensatory, but came directly from irritation of the nerve. Irritation or section of one auditory nerve would produce a strong deviation of the eyes to the same side. Upon section of the other nerve the deviation would cease.

Lucæ⁷ experimented upon some of his patients by increasing the pressure in the tympanic cavity. He found that by increasing the pressure, lateral nystagmus was produced, and when still further increased

to 0.4 atmospheric pressure, the eyes were deviated to the same side.

Högyes⁸ showed by a number of experiments upon animals that associated movements of the eyes and dizziness are produced by irritation of the endings of the auditory nerves. He considers that he has demonstrated a reflex cycle, consisting of the muscles of the eyes and the ampullary nerves, by which a reflex stimulation is transmitted from the labyrinth to certain ocular muscles. He found that movements were different according to the portion of the labyrinth affected, e. g., by irritating the horizontal semi-circular canals or ampullæ, there was oscillation or deviation of the eyes in a lateral direction toward the irritated side.

Baginsky⁹ also produced nystagmus and, when the pressure was increased, conjugate deviation of the eyes to the same side, by the injection of fluids into the tympanic cavities of young dogs. He believed that the symptoms were due to the increase of the cranial pressure, as the fenestræ were always ruptured by the force employed.

Besides these physiologic experiments, clinical observation has shown that pressure in the tympanic cavity and irritation of the auditory nerve will produce ocular movements. Kipp¹⁰ saw nystagmus in three cases of middle ear suppuration. It could be produced at will by syringing the ear or touching the tympanic wall with a probe. Pflüger¹¹ saw a woman, age 65, with otorrhea accompanied by dizziness. There was a polypus in the posterior superior part of the meatus, partly attached to the wall of the tympanic cavity. Lateral oscillating movements of the eyes were always produced whenever this was touched with a probe or an attempt made to remove it. Cohn¹² reports four cases of nystagmus with middle ear suppuration. The eye movements could be easily produced by syringing or irritating with a probe. He considers the movements due to a reflex from irritation of the auditory nerve, the inflammation having rendered the endings of the nerve in such a condition as to make this possible.

C. R. Holmes¹³ of Cincinnati, reports a case where conjugate deviation of the eyes to the left side, with severe dizziness and vomiting, lasted about two hours after an operation on the mastoid. The attic and antrum had been opened and the stapes mobilized with a probe. The eyes could be moved past the middle line by a severe effort, but would return at once to the extreme position toward the left.

Dr. Spear¹⁴ of Boston, with the assistance of Dr. Chandler, acting upon the statements of Högyes that the semi-circular canals and the vestibular portion of the auditory nerve were a peculiar end-apparatus regulating the movements of the eyes, examined a number of ear cases with dizziness and unsteadiness of gait as to their ocular symptoms. The results of their investigations showed an intimate connection between the sixth nerve and the vestibular portion of the auditory nerve. All patients with dizziness had exophoria of varying degrees dependent upon the intensity of peripheral irritation.

One case, a strong, able-bodied man, had a post-nasal hypertrophy of the right inferior turbinated occluding the Eustachian tube, severe otitis media with a small perforation of the membrane, the exudate causing pressure on the fenestræ, unsteady gait, staggering forwards and to the right. He appeared to have complete paralysis of the internal rectus of

the right eye with diplopia, as it was strongly deviated outwards and could not be brought to the median line. After applying cocain to the hypertrophy, in about ten minutes the patient could converge and walk naturally, and the pain in the ear and side of the head ceased. Another case with swelling of the turbinated and closure of the Eustachian tube had a divergence for which prisms had been given. Upon removing the obstruction to the Eustachian tube the movements of the eyes became normal. These cases were undoubtedly due to a spasm of the external rectus muscle from reflex irritation through the auditory nerve as Dr. Spear considered them. Why there was not deviation of both eyes instead of one is hard to explain, unless, as Gowers³ states, there is a center regulating the conjugate movements of the eyes aside from the abducens nucleus, probably the superior olivary body, slight irritation of which only affects the external rectus, but when the irritation is increased the internal rectus of the opposite side and ultimately the head is deviated.

I have not taken into account here the large number of cases with conjugate deviation due to lesions of the brain, either in the cortex, corona radiata or nuclei. Knies¹⁵ states that conjugate deviation to the opposite side may be produced by irritation of almost any portion of the cortex, but especially the cuneus or occipital lobe, the cortical center for vision, but if the lesion is sufficient to produce paralysis, the eyes will be deviated toward the affected side. But a cortical lesion in this case sufficient to produce a deviation toward the affected side would have been accompanied by some other symptom of paresis or paralysis or have affected vision to an appreciable extent. Of the large number of cases reported with conjugate deviation due to a cortical lesion they were all accompanied by some other symptoms such as deviation of the head, hemiopia or some affection of vision, and paralysis or paresis of the muscles of the opposite side of the body.

A lesion involving the pons or nucleus of the sixth nerve on the same side, could produce these symptoms alone, provided it was slight enough to only produce an irritation, but nuclear lesions are rarely so limited as that. It is not probable that a nuclear lesion could have been present in this case, considering the rapid termination and absence of later trouble.

A basilar meningitis would have affected the nerves during their course and the manifestation would have been that of a peripheral lesion. The sixth nerve would have been affected without the implication of conjugate movement, which is distinctly a cortical or nuclear manifestation.

The occurrence of the facial paralysis is of no special importance, as it occurs very frequently with middle ear suppuration from the extension of the inflammation to the Fallopian canal.

In reporting this case, I do it hoping that while it is unique (as I was unable to find a parallel case in the literature) it may be of service in calling attention to the fact that reflex movements of the eyes simulating paralysis or paresis, may be due to local affections of the ear. While the cases cited here only touch upon certain points, I think they are of service in justifying my diagnosis of a reflex spasm of the ocular muscles due to irritation of the auditory nerve.

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- 2 Text-book of Anatomy, 1893.
- 3 Text-book of Nervous Diseases 2d Ed. 1893.
- 4 Monatschrift f. Ohrenheilkunde, 1886, Nos. 8 and 9.
- 5 Text-book of Ear Diseases, 2d English Ed. 1893, p. 603.
- 6 Annales D'Oculistique, 1876.
- 7 Archiv für Ohrenheilkunde, 1881.
- 8 Archiv f. die Gesamte Physiol., 1881, and Biologische Centralblatt, 1881.
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- 10 Jahresbericht für Augenheilkunde, 1888.
- 11 Deutsche Zeitschrift für practische Medicin, 1878.
- 12 Berliner klin. Wochenschrift, 1891.
- 13 Knapp's Archives of Otolary, 1893, No. 4.
- 14 Medical News, January, 1892.
- 15 Die Beziehungen des Sehorgan und seiner Erkrankungen, etc., 1893, p. 76.

CAN TYPHOID FEVER BE ABORTED?

Read before the Mississippi Valley Medical Association, October, 1893

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The answer echoed and reëchoed from the great thinkers of the profession we all love and practice, from all over the civilized world, is one prolonged and emphatic negative, nowhere more emphatically spoken than in the great representative body of American physicians—the AMERICAN MEDICAL ASSOCIATION. At its last meeting in the city of Milwaukee the original papers, the discussions on them, and the editorial comments in the Society's JOURNAL clearly indicate this, and that the medical profession is not at all agreed on its treatment. The most divergent methods were advised; some condemned what others strongly advocated, these again advising different methods, only to be condemned again, and all were finally disposed of by the editor of the ASSOCIATION JOURNAL, who under the caption, "The Treatment of Typhoid Fever," says: "In the topic which heads this editorial the medical profession is certainly as much interested as it is in the treatment of pulmonary phthisis. The able papers and discussions which we have presented to our readers in the columns of this JOURNAL, during the past few weeks, have been of great value as reflecting the opinions of active practitioners whose practical experience is of inestimable service to less favored colleagues, yet the fundamental rules governing the management of enteric fever are not modified by these expressions of opinions. Differences in belief may exist, as to whether intestinal antisepsis is desirable or obtainable in typhoid fever, and whether this temperature or that, is to be treated as a dangerous symptom; but the important fact, that enteric fever is a disease in which good nursing and watching are the real factors productive in bringing about recovery, is universally recognized. In typhoid fever, above all other diseases, the physician must recognize that a cure is impossible, that he can guide the patient through the storm, but not stop the storm, that the only object he may expect to accomplish is the control of symptoms which directly or indirectly affect the patient unfavorably.

"While he may not be able to remove the cause of the symptoms, the very relief may be advantageous; then a delirium indicative of great physical or mental distress, or the presence of some complication inducing pain, may so exhaust the patient's vitality as to seriously impair his chances of recovery, and measures directed to the relief of these symptoms may save the particles of strength needed to carry the case over some crisis in his attack. There is, therefore, no specific or routine treatment by internal methods which should be resorted to when the diag-

nosis of typhoid fever is established, but there are two external methods aside from feeding which may be applied to so nearly every case as to be called routine, namely: absolute rest in bed, flat on the back, and the use of the bath in a more or less modified form; a simple mixture designed to maintain free action of the kidneys or stomach may be advised in each case, chiefly to comfort the patient and his friends, but beyond this nothing is to be used without a distinct indication by some prominent symptom. The necessity of absolute rest in early stages of enteric fever is known to every one, yet it often requires the most strenuous efforts on the part of the physician, particularly if he is not aided by a trained nurse, to maintain the degree of rest necessary. If there is one factor potent in rendering a prognosis unfavorable in enteric fever, it is the neglect of this precaution in the smallest detail, and every rising to stool may be regarded as a most unfortunate cause of future trouble and danger. The use of the bath, or more correctly water in any form during typhoid fever stands next in importance and next in its approach to routine.

"It is a mistaken idea with many physicians that the water treatment of typhoid fever is solely indicated by high fever; nothing can be more erroneous. While high temperature is without doubt a most important indication for the bath treatment, extreme restlessness is also a positive reason for its employment.

"Farther than this, there can be no doubt that the use of water not only lowers extreme temperature, but prevents its rapid return, and in some way advantageously modifies nutritional changes.

"Restlessness and insomnia accompanying fever too slight to require the full bath, are often entirely relieved by a tepid sponging, which soothes the irritated skin, and equalizes the circulation, refreshing and invigorating the patient.

"Each part sponged should be immediately rubbed dry, so that the patient may not be relaxed by soaking. We presume this does not apply to the cases of high fever, in which friction with the hand must be used to bring the blood to the surface where it may be cooled. We have not tried to indicate in this article the medicinal treatment required by various complications, as space forbids, but we are sure that if these views are followed, complications will be less frequent and a firm basis maintained for rational measures sometimes necessary for the relief of accidents."

These are the expressions of the matured thoughts of the members and of the editor of the JOURNAL of that ASSOCIATION, of which one of the leading medical periodicals of Great Britain, a not too partial critic, said nearly a quarter of a century ago: "That it is probably the most learned medical body in the world." I do not believe the great AMERICAN MEDICAL ASSOCIATION has taken any retrograde steps, and I do believe that we may accept these opinions, emanating from its members and from the trusted editor of its JOURNAL as coming, not only from the most learned medical body, but as the expression of the most advanced opinions of the highest medical authority in the world. And yet these are not extreme views. Everywhere you turn in medical literature, you see the same dark and gloomy picture of typhoid fever.

Now and then a new remedy is proposed, or some