

geal artery and its branches. When symbol or auditory amblyopia exists in such children, it is a reasonable idea that they may be taught to be left-handed. It is improbable that the corresponding cells on the right side are similarly affected, and thus the speech center and the centers for symbols and sounds may be transferred entirely to that side, or the right side be so educated that it takes command. Experimentation should be made along these lines, and it is my purpose to put this idea into execution in one of the cases described.

At present no postmortem corroboration of the assumed congenital lesions is extant.

CONCLUSIONS.

1. There is an incomplete word-blindness which is congenital and which should be called word-amblyopia.

2. There is doubtless an incomplete congenital figure-blindness, which may be called figure-amblyopia. This may be the basis of the inability of some children to learn mathematics as easily as their general intelligence would lead one to expect.

3. These two forms of amblyopia may be called symbol-amblyopia.

4. There is an incomplete congenital word-deafness which should be called amblykusic to parallel the term amblyopia.

5. There is doubtless an incomplete congenital musical-note deafness which may be the basis of the inability of some people to remember and appreciate musical notes; this should be called music amblykusic, or ambly-musia.

6. When cases of these kinds are met in the schools they should be carefully differentiated, properly grouped and instructed.

7. The basis of the instruction should be repetition, coupled with patience.

8. It is reasonable to teach such children to become left-handed, in order that the speech, symbol and sound centers on the right side of the brain may be cultivated to the exclusion of those on the left, or as supplemental to the defects on the left.

34 West Thirty-sixth Street.

DISCUSSION.

DR. T. W. KILMER, New York City, said that diagnosis is very difficult. It is a hard proposition to have a child brought into the clinic with the statement that it can not read. He has had several such cases and has not recognized them. When he was at college mathematics was his worst branch. He has always had special difficulty with the infant-feeding formulas because of the figures. Also, much money has been spent on his musical education. He plays by ear on several instruments, but does not know a note. Probably he has amblykusic, which Dr. Claiborne mentioned. He asked regarding prognosis and treatment, whether the prognosis is good, and whether Dr. Claiborne advocates removing the children from school. With reference to the ingenious plan of teaching a child to be left-handed, he asked whether Dr. Claiborne has carried it out or has just begun it.

DR. J. H. W. RHEIN, Philadelphia, said that in Dr. Claiborne's second case it would seem that the nature of the labor would have some bearing on the etiology of the condition which Dr. Claiborne described as congenital word blindness. If the child had had a hemorrhage which caused pressure in the region of the temporal convolutions on one side, it would readily explain some of the symptoms described. Whether the birth was easy or difficult, whether forceps were used, and whether there were symptoms immediately after birth indicating injury at the time of birth are important facts to be considered in explaining the nature of the interesting phenomena described.

DR. J. H. CLAIBORNE, New York City, said that, not being an authority on the subject, it was difficult for him to express

a definite opinion of prognosis. Inasmuch as each patient could recognize simple words like cat and dog, which had been constantly repeated to them by their teachers, it was clear that by repetition something could be done for them. He believed that in proportion as an impression can be produced on their minds by repetition, in that proportion can a good prognosis be made. Dr. Claiborne said that Dr. Kilmer has good musical sense, but has what might be called symbol amblyopia. Dr. Rhein has suggested a new thought in speaking of the nature of the labor. Cases should be studied and the labor should be inquired about, so as to ascertain where the harm was done, and on which side. Dr. Claiborne does not think that children should be set down as deficient in the public schools with no specialization of their deficiency. While they are classed to some extent in the public schools, no one has yet pointed out exactly in what respect they are deficient. Obviously they can not be treated until it is known in what respect they are deficient. If they have symbol amblyopia for letters or reading, such children should be put together and by repeating words and sounds, he believes they could be taught to read. In the matter of musical sense, of course, if one does not wish to study music, one should not be compelled. One of the greatest professors of the universities told him that he not only could not understand music nor appreciate it, but that it was painful to him. Dr. Claiborne added that this is the first time the subject has been discussed in the United States. It has been brought forward in England, in Germany and in South America.

NEURASTHENIA AS MODIFIED BY MODERN CONDITIONS; AND THEIR PREVENTION.*

THOMAS C. ELY, A.M., M.D.

PHILADELPHIA.

Whether neurasthenia be a condition or a disease or whether the term itself be properly or improperly used, the fact of its existence, of its untold mystery and increasing frequency is as certain as is the fact of civilization itself.

In all the fields of nervous maladies none is more widespread in its distribution and perhaps none more preventable than neurasthenia; a disease of unknown character and localization, the exact nature and seat speculative only; partly a morbid psychical asthenia and partly physical asthenia and irritability; so closely allied to hysteria and hypochondriasis that such can only be differentiated by grouping symptoms, by the symptoms-complex; simulating often degenerative diseases as tabes and general paresis¹ or incipient tumors; closely allied, often a seemingly transition stage, to the most grave psychic diseases; of no known pathology, except it be the late imperfect pathology of fatigue cells; the only sure known phenomena being the assured results, the symptoms which are protean.

Whether the conditions be designated as nervous exhaustion, nervous weakness or irritability, encephalasthenia, the American disease, "a paresis of attention and will," psychic fatigue, a diminished power of resistance to nervous and emotional strains, an "abnormal mental condition," or "disturbed ideational life," or whether we limit the term neurasthenia to conditions of the nervous system of lowered vitality to which functional disorder of some bodily organ may be assigned as a cause; or whether we include, as is often the case, under neurasthenia "many varied types of psychic disorders as the fear neuroses, insanity of doubt, different obsessions, hypochondriases, vasomotor paralysis, the

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Osler: "Practice of Medicine."

prodromal stage of organic brain disease," in any and all cases, the fact is indisputable that in America there is an increasing army of neurasthenic cases and in all classes, from the highest to the lowest.

We will better understand neurasthenia when we learn better to observe mental functions with the same precision as we observe the functions of the heart or other organs, individualizing the normal intellectual faculties, observation and power of attention, memory, judgment, reason, emotions, volition, their force and rapidity; the normal facial expression and speech, temperament, character, and actions.

In considering the condition known as neurasthenia it can not be fully explained as a variation from the normal psychic life, if by such we mean mind or intellect, nor as a variation from the normal physical life, brain or other organs. The "something" that exists as an independent Spirit in the body and after the body must be a partial factor.

If we have decided that the body is the only real independent variable and that psychical functions are the result of an infinite and unknown variety of biochemical and protoplasmic changes of body and brain, we have yet to consider that "something" which the philosophy and theology of all ages and races have groped for, and to conclude that neurasthenia is not a condition of any one organ, brain or body, but a condition of the entire individual. In fact, in all diseases advanced medical thought is taking more cognizance of the individuality and the personality of patients. "I am a soul," said Epictetus, "dragging about a corpse," and if the sage had remarked, "A sickly soul dragging about a sickly body," he might have been regarded as an ancient illustration of neurasthenia. Though modified by the physical, the absolute condition of neurasthenia seems one of mind, body and soul, and by restoring the physical the psychical may regain its tone.

Nature prescribes a boundary line to life, to all organs and functions of life, and surely to the nerve force of every individual. When that physical and psychical line is passed, we get a morbid condition known as neurasthenia. The difficult problem is to know the boundary, and then keep the middle of the road, at moderate speed, and not cut into the ditches, or waste power in hurry. Worry and hurry seem the most controllable factors in neurasthenia.

In the "Phædrus," Plato describes man as having three natures, and compares him to a pair of winged horses and a charioteer. "Of the two horses one is noble and of noble origin, the other ignoble and of ignoble origin; and the driving, as might be expected, is no easy problem." The noble steed endeavors to raise the chariot, and the other to bring it down.

The case of a woman taking the rest cure with a telephone at her elbow suggested the theme of this paper. Though many causes must be the same now as centuries ago, yet Hippocrates knew no telephone. Though the same geologic forces, heat, air, water and electricity for all ages have transformed the earth's surface, so in the main, unchanging causal conditions, through all time, have effected neurasthenia. Just as geologic forces change some portions of the earth's surface easily, and sometimes grotesquely, as in sandstone, leaving the hardy granite quite unscathed, so the same underlying causal conditions affect the nervous system of individuals, as they prove to be earth, sandstone, or granite, to the great stress of what we term modern civilization and social conditions.

The main etiologic factors which, in a measure, may be prevented seem to be:

1. Faulty hygiene.
2. Trauma.
3. Toxins and the neurasthenia of organic and functional diseases and of removable reflex causes.
4. Overwork and worry.
5. Heredity.
6. Mental education at the expense of the physical.
7. False ideals and standards of life.

FAULTY HYGIENE.

Disregard of the first and simplest principles of hygiene is often a preventable cause of neurasthenia. Many forget that the body is a large per cent. water, and forget to drink their quota of six or eight glasses of pure water daily, not with meals; or are careless of skin activity; or get insufficient sleep with too little oxygen or not enough food or improperly selected food, or with an idolatry for work, have no time for exercise or play. Tea, coffee, alcohol and tobacco in excess, and the American faults of bolting rich food and drinking ice water, are surely preventable causes. A certain percentage of the dust, and whistling, noisy pandemonium, smoke and bad air of the city, is in some measure preventable. Strictly following the simplest rules of sanitary science and dietetics would prevent many cases of neurasthenia, just as such measures cure tuberculosis.

TRAUMATIC NEURASTHENIA.

A common cause of neurasthenia is injury, particularly by transportation in this age of rapid transit and consequently of accident. The hurry and worry alone of too rapid travel, aside from the injury which acts out of all proportion to its severity, racks many an otherwise strong nervous organization. The liability of neurasthenia from accident, to those having by predisposition enfeebled resisting powers of their nervous system, is apparent when we consider that the total summary of railroad accidents in the United States for 1888, which is a fair yearly average, represents 5,288 killed and 25,888 injured,² with no account of injury from other methods of transportation, by the many electric systems, gasoline motor vehicles, cable roads, surface vehicles of all descriptions, elevated and underground roads, underwater, as well as on its surface; bicycles, balloons, airships; and all seeking the highest rate of speed, combined worry and hurry and consequent neurasthenia.

LOCAL NEURASTHENIA.

Local neurasthenia, as spinal, cardiac, cerebral (illustrated by the postal clerk who could pigeonhole 8,000 letters one day and very few the next),³ writer's cramp, etc., requires little comment except that their cure, which can be accomplished only by rest, suggests their prevention.

TOXIC NEURASTHENIA.

The familiar forms of neurasthenia accompanying the convalescent period of acute febrile diseases, such as scarlatina, typhoid, malaria, pneumonia, influenza, syphilis, and all other debilitating diseases, suggest the theory that some toxin may be the basic cause of all neurasthenic conditions. The neurasthenia of phthisis; of lithemic, rheumatic, and gouty conditions; the neurasthenia accompanying the puerperal state, that of the period of the menopause; the neurasthenia of exophthalmia, all suggest such a toxic cause. The neurasthenia of metal-

2. Bailey: "Accident and Injury."

3. Wood, H. C.: "Nervous Diseases and Their Diagnosis."

lic poisoning and of carbon monoxid poisoning⁴ is definitely toxic.

NEURASTHENIA OF ORGANIC DISEASE AND OF REMOVABLE REFLEX CAUSES.

Under the misleading term of neurasthenia many diseases are classified which are organic, particularly early and latent tuberculosis, atypical syphilis, the obscure lesions due to arteriosclerosis and autointoxication, particularly from the alimentary tract. When we consider the German exaggeration, "*Jeder man hat ein bisschen tuberculosen*," when we consult statistics of mortality that one-seventh of the population die of some form of tuberculosis;⁵ when we consult reports of tuberculosis sanatoria, showing a large percentage of cases having little or no temperature, cough, sputa, no night sweats, no tubercle bacilli, how many early and latent cases are unrecognized and termed neurasthenia, which on earlier recognition might have been prevented and cured? An uremic convulsion or albuminuric retinitis, or retinal changes of arteriosclerosis too often reveal an apparent condition of neurasthenia with little or no albumin in the urine, with few or no casts, and with even a fair percentage of urea on repeated examinations.

I never examine a case of neurasthenia without bearing in mind the valuable instruction of my late friend and benefactor, Dr. J. William Pepper, who used to lay such stress on systemic poisoning of toxins from the alimentary tract as a potent cause of neurasthenia, and who had such marked success in the treatment of such cases. The general practitioner of years' experience sees more illustrative cases, perhaps, of neurasthenia than the nerve specialist.⁶ Like the poor, they are always with him.

Gynecologists assign a uterine displacement as a reflex cause of neurasthenia. Surgeons declare a floating kidney or some movable organ is the cause. The practitioner insists that high living, liver disease, gout, lithemia, alcoholism, a toxin of some internal secretion, is the fault. Genitourinary specialists, particularly the French writers, have their view of the case; nasal specialists ascribe a spur or adenoids or hypertrophied turbinates as the reflex cause; the eye specialist attributes to eye-strain, with its well-known drain of nerve force, all the phenomena. Who is right? Are all partially right?

Have all men by heredity and training certain possibilities of nerve force, and if they go beyond the boundary line by reflex cause or other cause could all men become neurasthenic? "Man," says Shelley, "is an instrument over which a series of external and internal impressions are driven like the alterations of an ever-changing wind over an Eolian lyre." Surely it is incumbent to keep the harp well strung, and to remove every possible reflex drain of nerve force to prevent neurasthenia, and to assist in averting neurasthenic conditions.

OVERWORK AND WORRY.

Continuous mental strain, excessive overwork of mind and body, excess of all kinds, is agreed to be a chief cause of neurasthenia, and yet these conditions are not effective in the savage, tending to prove that in the vast majority of cases it is the worry and anxiety of civilization, and not the work, which creates the condition. In the hard-working farmer with no mental overstrain, unless it be worry, as well as the teacher or financier

who is subject to the greatest mental tension, we find typical neurasthenia; in one of most complete leisure, with no apparent strain, mental or physical, we meet the same perfect clinical picture of neurasthenia. What is the keynote of explanation in each instance? In many there is an astonishing propensity and idiosyncrasy for worry. If we may be allowed the fancy, the imagination, there may be a "worry center" just as real a psychic center as the motor center which controls the movement of the arm or foot. Such a "worry center" may be a developmental anomaly and exist by heredity only in certain individuals, and it may require some mental injury or shock or reflex cause of some diseased organ to bring it into excessive action, but the worry center is surely part of psychic brain anatomy. Surrounding this fanciful "worry center," pressing and mechanically irritating, and poisoning like the toxin of cancer, are brain tumors, as real as tubercle or sarcoma: brain tumors of fear for the future, this world or the next, gloomy forebodings, domestic difficulties, etc. It requires the surgical operation of a strong will to enucleate them and to restore mental health. Physiologically, such a "worry center" must be connected with association centers by association tracts, the higher physical centers inhibiting, controlling the resultant idea or thought.

What connection has the "worry center" with the whole sympathetic system which controls normal functions of all organs of the body? Must the pathology of neurasthenia always be unknown, this great disturbance of the psychic phase of brain life which is just as apparent and as little understood as the disturbance of motor centers in the well-known diseases we call epilepsy, chorea, and excitable mania?

HEREDITY.

As a rule, the causes of neurasthenia are not one, but the combination of many causes: faulty hygiene, overwork, worry, the modern stress of social, political or business life, with often a basis of unrecognized or non-recognizable organic disease, and yet heredity may be a chief cause, a morphologic fault of the original cell, an embryologic fault of the first tissue. It is according to this view endogenous, inside the cell from the beginning. External stimuli, the peripheral nerves and organs, have not so much to do with the production of neurasthenia as fatigue lesions of originally weak cortical centers (which ones we do not know), and of tracts (which ones we do not know) connecting them.

Such an embryologic condition, dependent on ancestry, is just as much a part of the man's mental make-up as his individual nose or his ear or his thumb are of his physical being. The fact that individuals vary so enormously in their capabilities for different kinds of mental and physical action and thought; that while some are endowed with scarcely enough nervous energy for eating and walking, others have a nervous organization capable of sustaining the greatest burdens of advanced civilization, bears out the theory that in certain instances individuals become neurasthenic because by nature and constitution, by structural and physiologic defects of their central nervous apparatus they have the predisposition to neurasthenia. Perhaps no better or older argument than heredity has ever been adduced. It stands a foundation cause as secure for all time as the Doric, Ionic and Corinthian columns stand in classic architecture. The thought having filled volumes of literature is as musty, old and ragged with age as an oriental rug, and, too, as valuable.

Granted, then, without discussion that heredity must

4. Marie: Bull. Med. Soc. Hop., Paris, 1888, v.

5. Strümpell: Text-Book of Medicine.

6. Weisenburg, T. H.: "Hysteria Simulating Brain Tumor," P. Med. Jour., May, 1906.

be reckoned as a cause, yet it is futile to harp on this plain, true, etiologic fact except as it leads by its recognition to the better care of a weak article and strict scrutiny of health in intermarriages. The future environment and surroundings of the child's life are the important factors because they only can be modified. What a useless, hopeless, pessimistic and impracticable view of neurasthenia in this practical age, to leave it to ancestry with the sage remarks that generations back treatment should have been instituted!

Prevention can not be too strongly urged in the marriage of neurotics who, unfortunately, are apt to seek with each other the marriage relation. The results attained in plant species, embryology, fertilization, and segmentation: the results attained in the breeding of high-class horses, dogs, and other animals, lead one to suggest that the most important part of the marriage license should have in view the prevention of neurasthenia and allied diseases, and should include a clean bill of health of the contracting parties.

A recognition of the factor of heredity is important in training the child. As has been often remarked, unfortunately those who have most directly the responsibility of training, i. e., the parents, are least fitted for the task of molding the child's psychic life, of leading out the functions of the child's mind to their best maturity and advantage. They may well know that "a spoiled child is never a happy one," and yet, being themselves victims of ancestry, they can not properly bring up their own defective offspring. Emerson wrote: "It matters little what your studies are; it all lies in who is your teacher."

EDUCATION.

Among the most common of remediable, or preventable, neurasthenic conditions are faulty systems of education, overcrowding the rapidly growing boy or girl in school work, weighing them down with home work when they should be engaged in relaxation of play and exercise. Even in college life, whether carefully rounded physical development, not over development as in some modern sports, is not of more importance than the high pressure of book knowledge. After all, education is orientation. It consists in original and individual power, not in the accumulation of facts; and such power must come largely from physical and practical training, and not from exercising the memory cells with book knowledge, however important in a lesser degree such mental gymnastics may be. A foundation of vigorous health and its accompanying high spirits is far more important than training the memory cells.

IDEALS AND STANDARDS OF LIFE.

Regarding ideals and standards of life, seeking short cuts to positions for which candidates are not fitted, false ambitions, and the inevitable disappointment and failure, the subject is too extensive even to touch on, for it includes the philosophy of all ages, all the philosophy of life and living. However, in the accumulation of material and immaterial wealth, in this age of knowing everything and studying everything, there is a reserve, a mental poise, a firm hold on common sense which can be cultivated and which tends to prevent neurasthenia.

SUMMARY.

The prevention of neurasthenia must be along the line of knowing causes and avoiding them.

1. Let every individual know his limitations and act accordingly. Let every individual know his own boundary line of nerve force and never cross it. Let every

individual live less of the strenuous life of any ideal hero, unless there is the same muscle and nerve force and training and honesty of purpose and endeavor also, which characterize such hero. Let every individual recognize heredity, predisposition and individuality of nerve force.

2. Learn to hurry little and to worry not at all. An illustration consists in the fatigue from the hurry to catch a train which is out of all proportion to the physical effort expended. It is the worry, the psychical fatigue, which is chiefly injurious. Individuals are too much like the modern telephone sign, "Always on duty," for hurried and worried business or hurried and worried pleasure. Hurry alone or worry alone are poisonous to the normal functions of the nerve system, but the American combination of worried hurry is deadly. Each brings into full action the worst features of the other. They are incompatible and the resulting combination is fatal to nerve centers.

3. Discourage and prevent intermarriages of those of neurotic tendency and parentage, who are unfortunately apt to be fond of each other and to seek such unions.

4. Follow strictly the a, b, c, laws of hygienic life, thus avoiding, as far as it is possible, not only pure neurasthenia, but the neurasthenia incident on organic disease. Lead the simple life of plain food and regular occupations.

5. Be sure that ideals and aspirations of life are true. Study limitations and qualifications and work along the lines of least resistance. Work, which may seem to be a cause of neurasthenia, is often a prevention and cure, diverting the mind from those troubles and anxieties which do not exist in reality.

Hope for future progress must rest on increased knowledge of the phenomena which cause neurasthenia and increased common sense in avoiding the causes. Certain ultimate problems must remain unsolved, yet who can limit the possibilities of increased knowledge. The great New World of truth lies yet undiscovered. Surely what we do not know about neurasthenia would fill a larger book than what we do know.

EFFECTS OF APERIENTS ON THE PERISTALSIS OF THE STOMACH AND INTESTINES.*

F. PFAFF, M.D., AND L. NELSON, M.D.

BOSTON.

We wished to study the effects of different drugs on the movements of the gastrointestinal tract. Before studying these effects we had first to find out the best method of observing such peristaltic movements. For this purpose well fed cats and rabbits were used. The animals were first anesthetized, the abdomen opened in the median line, and the intestines, including the stomach, exposed to full view. To protect the intestines from the air the animal was placed in salt solution, as advised by former investigators, in such a manner that the head and thorax were kept above the salt solution and the breathing not interfered with. In our experiments 0.8 per cent. salt solution proved to be the best.

After the animal recovered from the ether and the shock following the operation, the picture observed, as a rule, was as follows: The stomach was full of food and the entire small intestine empty and collapsed, while the large intestine, especially the lower part, contained

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.