final stage of this increase the movement becomes *entirely insensible and affects consciousness only through the results in which it co-operates or the impressions with which it is associated.*" In other words the habit becomes submerged in the vast realm of the subconsciousness, where upon appropriate stimulation it manifests itself in automatic activity.

If, furthermore, we inquire why certain of the reactions to external or internal stimuli which go to form habits, are pleasurable and why certain others are painful, the answer would seem to be that such reactions are teleological.

Stimuli which produce in consciousness disagreeable accompaniments are usually harmful to the organism and therefore to be avoided, whereas stimuli which produce in consciousness pleasurable accompaniments are usually beneficial and therefore to be augmented. Thus we avoid pain, disagreeable tastes and smells, and cultivate stimuli having the opposite characters, although the former no less than the latter are normal physiological reactions to stimulation. They are, therefore, and this is important, *per se*, not pathological at all and are so only in the sense that they produce unpleasant effects or are united in disagreeable or atypical combinations, which we find to be the case in the habit neuroses.

Turning now to those affections which we classify as association or habit neuroses, and applying the principles which have been explained above, we find upon close analysis that these neuroses are simply perverse habits which have been acquired at some previous time, and which have persisted long after their original exciting cause has ceased. They are associations wherein the nervous system has been educated by one means or another to respond to normal and customary stimuli with disagreeable and unwished for effects which may be sensory or motor or both. Were these effects agreeable we should not call them neuroses.

Therefore we have arising upon a basis of suggestion or disease a habit of response which to the nervous system has become a second nature, and in which it continues so long as the association is not dissolved. The cases herewith reported exemplify this very well. In the first pain, and in the second and third nausea and weakness represented perverse habits of response, and so pure association neuroses.

And that these patients were the subjects of a habit neurosis becomes a matter of demonstration when we consider the success of the therapeutic measures employed in each case.

Clinical Department.

CASES ILLUSTRATIVE OF SYPHILIS OF THE NERVOUS SYSTEM.

BY S. G. WEBBER, M.D., BOSTON.

I HAVE given only abstracts of cases, trying to give a variety such as will illustrate the manifold symptoms as seen in different patients. My

purpose is simply to give varied clinical illustrations without touching upon pathology in any way.

Among the symptoms dependent upon cerebral syphilis there are none which belong exclusively to that affection. It is rather by the history of the case, of its early stages and course, and by the grouping of the symptoms that a probable diagnosis can be made. There is often an irregularity in the phenomena which shows that there must be more than one focus of disease; and sometimes the symptoms have a peculiar ephemeral character, with remissions and variations.

HEADACHE.

The most common symptom attending syphilis of the nervous system is headache. This is the earliest in its appearance, preceding other graver symptoms and giving timely warning that subsequent danger may be avoided. Its characteristics are, great severity of the pain, either almost uninterrupted or with remissions, sometimes with intermissions. In many instances the pain is most severe during the latter part of the day, or in the night, though there are frequent exceptions to this rule. Sometimes the pain seems located in a limited region, sometimes it is spread generally over the head. It may be bilateral or confined to one side. The above peculiarities are very similar to those attending headache caused by cerebral tumor; but in syphilitic headache nausea and dizziness are generally absent.

CASE I. The first case is one of headache simply, with no other symptom. Mrs. N., aged fifty-five, had had syphilitic caries of some of the bones of the face about eight years before I saw her. For four weeks she had had pain in her head, chiefly on the right side. There was no disturbance of sensation or motion. She lay much of the time with the clothes drawn over her head. The pain was sometimes occipital, sometimes frontal. Iodide of potassium was given in increasing doses, and after five days she received forty grains three times a day. In about a month she was free from pain.

CASE II. The next case is one of hereditary syphilis. It illustrates the necessity of continuing treatment long enough and the dangers of a return of symptoms with the addition of others more serious. Mr. B., aged twenty-three, had had syphilitic iritis five years before I saw him. His upper incisor teeth were characteristic syphilitic teeth. Three months before I saw him, he had headache; he was also conscious that he was losing strength. He was not dizzy and had no nausea. He walked well with his eyes shut for a short time, then he staggered. A small dose of iodide, five grains, was sufficient to relieve the pain, at least in a measure, but after a month it became worse and the dose was increased to ten grains, three times a day. The pain left and he continued in fair health, attending to duties which required much brain work. Nearly two years later the headache returned; there was a swelling over the left eye; the left arm was at times stiff so it could not be raised to his head; if moved it pained him; at times he was dizzy, had been so for six or eight months. The right pupil was the larger; both reacted poorly to light. Knee jerk was well marked, there was no pain nor

stiffness in the legs. He was again put on iodide of potassium in larger doses, forty grains three times a day, and one-tenth grain of biniodide of mercury was added. The swelling and headache disappeared. He became so deaf he could not attend to his duties. Because of the deafness the iodide of potassium was omitted and the mercury increased; he was put to work on a farm. His hearing improved but the headache returned in about two months. An examination of his eye showed besides the iritis only a choroiditis. The iodide was resumed in doses of thirty-five grains; all the symptoms improved, hearing returned. He has not been seen for some years. This young man was brought to me by his uncle, who insisted that he should not be informed as to the nature of his affection. In this I believe the uncle was wrong.

CASE III. This case is one of headache with only such other symptoms as often attend such pain. The dose needed for relief was the largest I have known to be required, three hundred and eighty grains a day. My advice to the attending physician was to increase the dose rather rapidly until some effect was obtained, and I have no doubt the drug was given judiciously.

Mr. — had been ailing six months with headache. He had had primary sore two years previously. In August the pain became continuous, no day being free. In December it was very bad; he was so dizzy he could not trust himself to walk, staggered, less strong than usual, eyes ached. There were two exacerbations of pain in the day, one at 1 P.M., the other in the night. The pain came and went slowly. He was put on iodide of potassium and mercury. His physician wrote that the iodide had been increased in about two weeks to three hundred and eighty grains a day before he had much relief. He also took an eighth of a grain of bichloride of mercury three times a day. He improved wonderfully; the medicine was given in lessened quantity for some time. He got virtually well.

CASE IV. This patient had headache early, before the secondary skin eruption. Miss K., aged twenty-three, had headache thirteen days before I saw her, which increased in severity, the pain lancinating, worse on the right, scalp very tender, tender also over the radial and median nerves. The pupils were of medium size, did not respond to light, did to accommodation. The pain was so severe it was necessary to give morphia at night. Under iodide of potassium, increased to fifty grains three times a day, the headache ceased in less than a month. Later, an eruption appeared on the face and body quite distinct from the iodide eruption, resembling syphilitic. There may be a suspicion that this was a beginning tabes. That is possible. I have no history of the patient's subsequent life.

I have seen a case of extremely severe headache, incapacitating for business, beginning before the eruption, continuing during the presence of the latter, and not yielding to treatment until the skin affection had nearly disappeared.

CONVULSIONS.

Syphilitic infection may be the cause of convulsions closely resembling epilepsy. Such patients may have the *petit mal* as well as the *grand mal*. It is at times very difficult to determine the syphilitic origin of the attacks. If they begin after early adult years, and especially if headache has preceded, for any length of time, the convulsions, syphilis should be suspected. Such a history led me to recognize the cause in

a middle-aged woman, who had been deceived fifteen years previously and seduced under false promises of marriage.

CASE V. Miss D. had had for four or five years headache once in one or two weeks. She was seen in March; early in January she had had neuralgia through the right eye and temple after exposure to a draught of air. About a week later she had lumps on her head, which were tender, also a thumping in her head; the right lid drooped and was swollen, the eye was sensitive to light. The lumps remained about a week or more, were about as large as a quarter. Two weeks before I saw her she had a convulsion. While going down stairs she became dizzy, then lay down, could not collect her thoughts, jumped up to put water on her head, put her hands on her head, said, "Oh, my head!" and then dropped. Her eyes stuck out, she frothed at the mouth, worked hard, teeth were clenched, face was dark. The attack lasted about fifteen minutes. When she came to she felt tired, no headache. She received twenty then sixty grains of iodide of potassium three times a day, and a sixth of a grain of biniodide of mercury. Four days later the eyes were nearly natural, the headache soon left, there was no dizziness. She did well for a year; then her sister was sick and she was much taxed with care of her. The headache returned for a while, but yielded to renewed treatment.

CASE VI. Partial spasms or monospasms, which indicate irritation of limited areas of the cortex, are among the most interesting convulsive phenomena in cases of syphilis. Partial or total paralysis sometimes follows these attacks. This paralysis may be temporary or permanent. The following case is rather remarkable in that the patient recovered notwithstanding the severity and long continuance of the convulsions. His history was not clear; it seemed probable that he had had syphilis. He had had headaches for some time, then one or two convulsive attacks at long intervals; the first, six years before I saw him, in which the head and eyes were said to have turned to the right. A short time before I saw him the spasms had become frequent. I found him unconscious, having convulsions every three minutes. They began on the left side of the face, the eyelids and mouth moving rapidly, then the head and eyes were drawn to the left; the arms were then seized with a tremor; the legs were very slightly, if at all, affected. The whole attack was of about a minute's duration. Between the attacks, as near as could be judged, the left side was paralyzed, the right not. These convulsions continued several days, they then ceased; he regained consciousness. I have no notes of the amount of medicine given, as he was seen only once in consultation. I have not been able to learn the details of his subsequent history as he moved to another town, but learned that he later died from the effects of the syphilitic poison.

CASE VII. In this case maniacal excitement was one of the symptoms following convulsions. Mr. R. had had some difficulty in speaking, also severe headache. One night he had a convulsion, his head and eyes were turned strongly to the right, he frothed at the mouth, jaws were firmly closed, the right side of his face was violently convulsed, the right hand and arm described an indefinite rotatory motion, the right leg was not moved. He was unconscious during the half hour the attack lasted. When I saw him the next morning the pupils were small, responded to light, the tongue was protruded slightly to the right, there was no other paralysis. Reflexes were normal. He was unable to say a word. During the day he had

two more convulsions of shorter duration. He became delirious, and a state of maniacal excitement continued for two or three days. He slowly regained the power to talk and finally seemed to be entirely recovered. He received the iodide in doses of fifty grains and biniodide of mercury a sixth of a grain.

PARALYSIS.

Hemiplegia, occurring suddenly as from cerebral hemorrhage, is not common as the result of syphilis. A gradually increasing paralysis of one side is more common. A unilateral weakness of one or both extremities, which continues a short time, disappears, then recurs again and again, especially if accompanied with attacks of numbness in the same parts and preceded by headache, is much more significant of a syphilitic origin. It is not uncommon to have a slight motor weakness of the limbs in cases of paralysis of the cranial nerves.

The ocular nerves are more frequently paralyzed than other cranial nerves; in many cases the paralysis is not complete, only a few of the fibers losing power, or there is only a weakness of the muscles supplied by one nerve. The facial, hypoglossal and nerves of special sense are much less frequently affected. Generally headache precedes or accompanies paralysis of cranial nerves; sometimes instead of headache there may be obstinate trifacial neuralgia.

Aphasia may be present with spasms or paralysis, or it may exist alone. After other symptoms have subsided the difficulty of speech may remain.

CASE VIII. Mr. Y. was seen in October. The previous May he had had a chancre; early in July a mild secondary eruption and slight affection of the mucous membrane of the mouth and throat. These symptoms yielded readily to a mild mercurial course. Later he had headache. The day before I saw him, he had a decided partial right hemiplegia with impairment of speech. He could scarcely move the right arm. When I saw him the next day the right side of his face was partially paralyzed; there was tremor of the right hand. Motion was not impaired in arm or leg and the next day he was all right. A few days later the right side suddenly lost power for a few hours; he found it difficult to walk. He recovered entirely, his headache left. The iodide caused a slight eruption which made him very nervous. In consequence of his feeling thus the iodide was unwisely diminished too soon. In less than three weeks the headache returned and there was numbness in his right little finger. The iodide was increased to fifty-grain doses, and a seventh of a grain of biniodide was given with it, and soon all symptoms disappeared.

CASE IX. Some sixteen years before I saw Mr. H. he had had syphilis and secondary symptoms later. About thirteen months before I saw him he had lost power to talk or write for about fifteen minutes, without paralysis or loss of consciousness. A slight numbness in the index and middle fingers of the left hand remained, no weakness of the right hand. Eleven months later he had headache and again lost power to articulate; he walked less steadily than usual, there was not loss of speech nor of power to write, only difficulty in articulating. He gradually regained his speech, though when he tried to talk the words ran together and he was slow in understanding questions

and in answering. In writing he wrote all the letters of a word, but placed them in the wrong order. When seen his speech was again bad, he spoke slowly, deliberately, with some hesitation, waited some time before answering. The right pupil was the larger and was immovable; the right side of the face moved less than the left. No paralysis of limbs. About three months later he had convulsions which recurred with increasing frequency for two months, when he died.

CASE X. Mr. F. had primary sore in July, soon after secondary eruption; in October some disturbance in sensation in right hand; one morning in November the right hand was numb, and the right leg gave him trouble. During the forenoon he lost speech; was able to go home alone. The right hemiplegia increased until he could not walk. Subsequently he gained so he could go around the house. His face was not paralyzed, tongue was protruded to the right. The next spring the right arm was contracted, deep reflexes were exaggerated on the right. He had partial aphasia; sometimes he could answer questions but not always. He was unable to give the names of objects, but recognized the correct name when it was given. He continued in this condition so long as iodide of potassium was given. When that was omitted, I believe he had a convulsion. I do not know the subsequent history.

MYELITIS.

Syphilis of the spinal cord is less frequent than cerebral syphilis. There are no special symptoms indicating its presence as distinguishing syphilis from other lesions of the cord. Perhaps many cases of tabes reported as cured were cases of syphilitic lesion of the posterior columns. When there are other symptoms referable to the head the diagnosis may be made with some degree of certainty. Otherwise the general history of the patient must be the guide.

The prognosis in spinal syphilis is much less favorable than in cerebral syphilis.

CASE XI. The following case might well have been considered one of tabes, but the rapid and complete recovery would not warrant that diagnosis. Mrs. B. was sent me by her family physician. Six or seven years previously she could scarcely read, saw double, left ptosis; recovered without treatment. About a year before I saw her she had occasionally a numb, sleepy sensation in one arm and hand. She had had trouble in walking, her legs being weak; this weakness varied from day to day. Two months later the legs felt numb and there was a sense of constriction about the waist. She had had slight shooting pains in the legs and left arm.

There was diminished sensation in the left hand and thighs; in the feet sensation was normal. Patellar tendon reflex was absent on both sides. She walked unsteadily with her eyes shut.

Her physician knew she had a specific taint. Under iodide of potassium and mercury she entirely recovered.

CASE XII. This case is, perhaps, as characteristic of spinal syphilis as any case I could select. The control the iodide had over the disease in delaying its advance for more than two years is of interest, and the rapid progress which followed its discontinuance is instructive. Mr. T., aged thirty-five, said he had had three chancres, had had sore throat, but no other symptoms. Eight months before I saw him he noticed a trembling in the left leg. Within forty-eight hours the leg became heavy and lame about the ankle.

The foot felt heavy and dead; this feeling extended upwards and when it reached the knee it was like drawing a leaden leg after him. In five weeks from the first appearance of the above symptoms these sensations had extended to the thigh and the right leg began to be similarly affected. He had no numbness, no tingling nor pain in the legs, only the "dead feeling" in his feet. When both legs gave out he had a sense of constriction about the waist and around the ankles. There had been some retention of urine and twice temporary incontinence.

During the three months just previous to my seeing him, his legs were at times suddenly drawn up in bed without his knowledge; this was most common in the evening while sitting up. When this contraction was sudden, he had a sharp pain in his back. At one time he had regained partial use of his right leg, then he had a feverish attack with delirium, and afterwards his condition was worse.

There was marked diminution of sensation in the legs and lower part of the abdomen. He could draw up the right leg, but not the left. The knee jerk was somewhat exaggerated on the right, not on the left.

He received iodide of potassium in increasing doses. After two weeks, while he was taking thirty-five grain doses, he had a sensation as if hot water were running over or through both legs, and the thighs were tender to the touch; he could manage his legs better; below the knees he felt more natural and stronger; there were fewer attacks of contraction. The iodide of potassium was increased to two hundred and seventy grains a day. He slowly improved, was able to draw up both legs, could sit in a chair most of the day, but was not able to walk; could move his legs in bed. After about two years and a half, he had some bad feeling, and without medical advice left off the iodide. He became worse, had severe pains in his face. He sent for me. I found there was total paraplegia with almost total anesthesia; the left arm and left side of the face were partially paralyzed; he was blind with the left eye. He soon after died.

NEURITIS.

Syphilis of the peripheral nerves is not common; lesion of nerves due to syphilitic tumors may not be infrequent, but primary syphilitic neuritis is not easy to recognize. I know of no special diagnostic symptom. The following case, considering all the circumstances, probably belongs to this class.

CASE XIII. Mrs. P., aged twenty-eight, wife of a sea captain, was never very well; her eyes troubled her after measles; she had nervous headaches caused by using her eyes. About three months before I saw her she began to have a numbness in the right ring and little fingers, so that at last she could not dress nor feed herself; there was also pain in the hand, more along the ulnar border, not in the wrist. After using the hand in cutting out a dress, it swelled, and the pain extended to the middle of the forearm, which was contracted on the arm. Since then the pain had been severe, burning and smarting in character. There was a purplish eruption on the arms and legs which did not itch. There was tenderness over the principal nerves of the arm. Blisters were applied over the tender spots and iodide of potassium was given in increasing doses. She entirely recovered. I could not question directly as to syphilis, but the history and course of the disease renders it very probable that it was a case of syphilitic neuritis.

It will be noticed that these cases are not peculiar in their nature from those caused by other lesions of the nerve centers. There is no symptom pathognomonic of syphilis of the nerve centers. When, however, the succession and grouping of the symptoms in any case are considered, we may obtain a hint as to the nature of the process.

Many of the cases reported presented a series of attacks, the earlier being generally the less severe, headache being frequent; the later attacks sometimes very similar, but often more severe and with additional phenomena. The earlier symptoms had disappeared so entirely in some cases, as to lead to the suspicion that there had been only a temporary circulatory disturbance. Among the group of individual symptoms which are most significant of syphilis, besides headache, which has been already fully described, are paralysis of the motor muscles of the eye. Isolated paralysis of these muscles should arouse a grave suspicion of syphilis. Monospasms and localized paralyses due to cortical lesion, without previous trauma, are also symptoms which should awaken attention. Aphasia, without paralysis, if hemorrhage or embolism can be excluded, should have the same weight. Such repeated and ephemeral attacks of hemiplegia as are described in Case VIII should put the physician on his guard.

The time at which nervous symptoms appear after the primary infection is extremely variable. I find from analysis of the above cases and others not reported, two and one-half months the shortest interval; twenty-five years the longest; in the majority of cases the nervous symptoms appear within three years. I was surprised to find so many under one year.

In about half the cases there was no knowledge of the primary disease, or it seemed desirable not to inquire too closely into the patient's antecedents.

I hesitate to say much about prognosis. If headache is the only symptom, or if they are variable and intermittent, the prospect of recovery is fair. I have followed such patients for years and seen no relapse. If the symptoms point to organic change, recovery is very doubtful; but even under such conditions the progress of the disease may be arrested. Some of the cases show that it is necessary to continue the treatment, at least intermittently, many years, and that if omitted entirely there is danger of a serious aggravation.

In treating syphilis of the nervous system, it is often necessary to act with great vigor. In slight cases a moderate dose of iodide of potassium may be all that is necessary; fifteen to twenty grains three times a day, or even less, may be sufficient to relieve headache. If this proves to be so, there is no special need of resorting to large doses; but the drug should be continued some months after the pain has ceased. Where the symptoms are more serious it is dangerous to temporize. I have never regretted giving large doses; I have been sorry a few times that I

gave small doses. If there is reason to suspect lesions to nervous structure the iodide and mercury should be given at once in sufficient doses to make an impression. Ten or fifteen grains three or four times the first day, increased to twenty or twenty-five the second day, are none too large doses of the iodide of potassium. In a case where hemiplegia seemed to threaten, the patient received thirty grains during the first night, the next day twenty grains four times, the following day thirty grains four times. In a case of neuralgia, probably of syphilitic origin, I gave with benefit seventy grains the first day, and one hundred and fifty grains daily afterwards for nearly three weeks. Three hundred and eighty grains daily has been the highest dose reached in any of the cases reported. I have given much larger doses, but without benefit, and also without harm, to the patient. In some cases, small doses of five and seven grains three times a day were illy borne, causing various unpleasant symptoms; but when the dose was increased fourfold these unpleasant symptoms disappeared, and the patients improved rapidly. Several years ago I had the same experience, one hundred and twenty-five grains daily being more acceptable to the patient than forty-five grains, and in another patient sixty grains daily caused less discomfort than fifteen grains.

In a few instances the very large doses given with mercury have caused diarrhea. This may have been because too little water was given with the iodide, though I think not. A few drops of tincture opium relieved it, or it ceased on diminishing the dose. Where there has been clear evidence of syphilis other discomfort has been rare; in some doubtful cases sixty grains a day have given rise to such disturbance as to oblige a discontinuance of the drug. Many patients have gained in appetite and flesh while taking the medicine. If taken largely diluted with water, the stomach is rarely disturbed by the iodide. I have found that patients are not affected alike, some are disturbed by it taken before meals, and prefer taking the dose after meals, others prefer to take it before meals; others, when a large amount is given, like better to divide it, taking part before and part after meals.

In severe or threatening cases it is better to combine mercury with the potassic salt. Inunction is recommended by many, and I sometimes use it, but the bichloride or biniodide internally is generally preferred by patients, and I think answers the purpose well. I have occasionally combined inunction with the internal use of mercury, where I desired to make a rapid impression. I have very seldom given more than half a grain of the mercury.

Other than this specific treatment may be needed. Iron and cod oil are often of advantage. It is scarcely necessary to enumerate the other methods by which weakness and general debility may be combated.

This course of treatment must not be stopped when the symptoms have disappeared. It should be remembered that the poison is still in the

system and ready to cause further trouble. I have seen several cases where too great confidence in the cure has been followed by a return of the old with the addition of new and more serious symptoms. It may not be necessary to continue the very large doses, but forty-five or sixty grains a day may be given for several weeks. If the patient can be under control, it is well occasionally to have recourse again to the iodide even if no new symptoms arise. A few cases lead me to think that when there has been organic change of the nerve centers it is safer to continue the medicine uninterruptedly

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., AND WILLIAM D. HALL, M.D., BOSTON.

LOCALIZATION OF THE MACULA LUTEA IN THE BRAIN.

LAQUER,¹ in face of a recently published monograph which locates that part of the cerebral cortex which represents the macula as being in the anterior portion of the calcarine fissure, believes from the study of a recent case that it should be considered as being in the posterior portion. About one year before his death the patient developed a bilateral hemianopsia, but retained excellent vision in a small central area. The autopsy showed the right occipital lobe to be softened in the neighborhood of the calcarine fissure, except in the most posterior portion about 18 mm. from the tip of the lobe where the cortex and medullary portion were completely intact. Much the same condition was found in a second case in which a bullet had pierced the back of the head. It is fortunate that a center is located in each hemisphere.

OCULAR LESIONS CAUSED BY LIGHTNING.

Gonin² noticed in the case of a patient who had been struck by lightning superficial opacities of the cornea, swelling of the face and ciliary injection. After a few days, an opacity appeared in the posterior part of the left lens, which afterwards cleared, at about which time opacities appeared in the anterior part of the right. Both nerves became partially atrophic, with corresponding reduction in vision. Literature shows cataracts in 19 of 22 cases; there was atrophy in 8. The atrophy of the nerve is usually unilateral, and only appears after weeks or months have elapsed. In almost all of the cases conjunctival, corneal and skin symptoms were present. Iris involvement even attained the severity of an irido-cyclitis. The motor disturbances of the third, fourth and sixth cranial nerves were temporary in character. As a result of experiments made by Hess and others, he concludes that the ocular lesions caused by direct action of electrical discharge upon the tissues of the eye differ from those which result from the effect of

¹ Virchow's Archiv., v, 175, No. 3.

² Annal. d'Oculist., Feb., 1904.