of other toxic agents on the brain. Epileptic insanity, from syphilis, is a well-known type.

The treatment of these cases of derangement from lues is that of the specific disease, with, of course, attention to the special symptoms of the patient's mental condition as they occur. The patient is primarily a syphilitic, and much good can be done to the physical health and occasionally also to the mental symptoms, though the prognosis in these cases is not particularly good. If no extensive organic changes have taken place and the case is largely a syphilophobic depression the prospect is often a hopeful one. These cases are, however, the exception.

Non-syphilitic brain tumors occasionally produce mental alienation and the type is often similar to that from specific disease—a gradually progressive dulness or dementia. They are, of course, not so liable to be multiple or to be associated with diffuse disease of the membranes and vessels, and aside from general pressure symptoms their location may affect the form of insanity. Tumors in the frontal lobes and corpus callosum are apparently most frequently attended with decided mental symptoms, though a certain degree of dulness and impairment may occur with them in other locations. Starr says that neoplasms in the base of the frontal lobes are not accompanied with these mental symptoms. This is not universally correct, for I have seen what was apparently a soft gliomatous growth involving this region and extending backward so as to involve the optic nerves and produce total blindness accompanied with a very profound dementia. In a very large proportion of cases of tumor there is not any positive insanity, though there may be some slight degree of dulness of perception, aphasia, somnolence, etc., and often there are no real mental symptoms whatever.

Abscess of the brain, apart from traumatism, is not commonly recognized as a cause of mental disorder. Acute abscess is, of course, often associated with meningitis and there are likely to be delirium and other symptoms of meningitis.

Traumatisms are a frequent cause of mental aberration both as an immediate and as a late result. A very large proportion of epileptic insanity is really due to this cause, but this type need not be here considered. The mental disorders from traumatism may take on various forms, some of them in no way characteristic of their cause, and for this reason some text-books contain no special chapters on this subject and do not include it in their classification. There are, however, certain mental symptoms frequently following severe injuries involving the brain, and the use of the term traumatic insanity is to a certain extent justified. The usual first result of a cerebral concussion, for example, is unconsciousness, which may last for from a few minutes to several hours or even for days, and be followed by either recovery after a period of hazy consciousness or by a confusional delirium that may in some cases be permanent or pass into a condition of dementia. In other cases there may be melancholic or maniacal symptoms or a dementia from the beginning. The more serious symptoms, of course, are likely to follow severe injuries involving the cranial bones, lacerating the cerebral substance and setting up suppurative processes in the brain by infection. A common immediate mental condition, according to my observation, has been a semi-dazed state in which the patient seemed unable to get rid of some besetting idea often connected with the accident, and asked over and over again in regard to it, apparently immediately forgetting the replies received. Sometimes, and this is rather frequently the case, the patient appears to get over the immediate effects of the injury, but after a longer or shorter time secondary results begin to appear: cerebral symptoms, such as vertigo, tinnitus, cerebro-asthenic symptoms, incapacity for mental exertion, failure of memory and of attention, sometimes a peculiar obstinacy and wrong-headedness is noticeable, together with morbid impulses and moral deterioration. While in some cases it is hard to say that the patient is actually insane, it is very evident that he is not the same person as before.

This change may be progressive, ending in more or less pronounced dementia, or epilepsy may supervene—this last is perhaps as frequent an outcome of these cases as any other. The locality of the injury may affect the form of the mental change; it seems probable that moral deterioration and general change of character are most likely to be observed after injury of the frontal lobes and more noticeable because, when these are most involved, the physical symptoms of disorders of motor functions and sensation are less likely to overshadow them. There is also after brain injury, according to some authorities, a special weakness toward alcohol or drug habits; Macpherson says that a very large proportion of these cases of late-appearing traumatic insanity take to alcohol as a habit, and Kraepelin remarks on the peculiarities of these subjects toward alcohol. When the brain mischief has progressed sufficiently to produce decided mental symptoms long after the injury, it generally implies profound alterations and the prognosis is correspondingly unfavorable. The condition may not be a constant one, it may take on the remittent form, indicating a lesser degree of degeneration, but one hardly more encouraging as regards the final outcome. I can recall few if any cases of genuine traumatically caused insanity of the late-appearing type that made a permanent complete or even approximate recovery. The case is different with the derangements directly following injury; they may be only temporary, their course and outcome depending on whether there has been a lasting lesion set up, or one that so embarrasses intellectual and emotional functions as to cause functional arrest, or leads to functional perversion. We know that many serious injuries of the brain occur without doing this, but there is always a chance that even apparently slight injuries may be followed by serious consequences. Whatever the type of the insanity, whether dementia ranging from perceptible moral and mental weakness, to the complete form, or delusional or periodic maniacal attacks, the prognosis is alike dubious.

In many of what are considered ordinary cases of insanity from brain injuries, there is probably an epileptic element that can be determined only by close and prolonged observation. Something may be said here of the popular belief that occasionally brain traumatisms may improve an existing morbid mental condition. There is little if any reliable medical evidence of this, and all that can be said in its favor is that its impossibility has not been demonstrated. It is as rational to believe that an accidental traumatism might possibly relieve intracranial pressure as that an artificial one can do the same in Lanelongue's operation, but it must be a very rare and happy accident.

If insolation is, as some recent writers have held, an infectious febrile disease, it would not be correct to class mental disorders caused by it as traumatic insanity. It has nevertheless some of the characteristics; the frequent late appearance and the common occurrence of epilepsy are especially notable. In my personal experience, however, I have seen more cases of delusional insanity from this alleged cause than was the rule from other traumatic causes. It is probable that insolation is made accountable for some cases of insanity in which its action has been merely an incidental one, *e.g.*, in degenerates, etc., but there are undoubtedly cases in which it alone is responsible.

The most frequent psychic symptoms following sunstroke are said to be general weakness and incapacity for mental exertion without necessarily active derangement I have seen a number of cases of what might be called late-appearing paranoic insanity, and in one or two cases mania following the accident and credited to it after many months. Cases of terminal dementia from this alleged cause are not rare in asylums, the history of the original disorder being often lacking.

The treatment of traumatic insanity is necessarily largely symptomatic. Cases are reported of cures through surgical operations, and it is, of course, possible that comparatively recent cases dependent upon tangible

lesions may thus be relieved, but some at least of the popular stories of cures of long-standing dementia, etc., by trephining are most probably apocryphal. The cases of traumatic insanity of long duration that have come under the observation of the writer were generally hopeless as regards recovery. The liability of recurrence in apparently recovered cases must also be kept in mind; the association of traumatism with recurrent insanity is especially noted by Bevan Lewis.

Recent cases of mental disorder from traumatism should be treated like other recent insanities, keeping in mind the cause, and if there is any probability of betterment by surgical operation that can be safely resorted to the chance should be taken. *Henry M. Bannister.*

XIV. INSANITY OF THE NEUROSES.—The general neuroses, of which the most important to us are hysteria, epilepsy, neurasthenia, and chorea, should be considered from two standpoints, according as they affect previously healthy nervous systems, or as they develop in individuals whose nervous systems are unstable on account of hereditary taint. In the former they run their course without involving the mental processes, but in the latter some mental disturbance, however slight, will result. Notwithstanding the complexity and extreme diversity of the symptomatology of the psychoses dependent upon the neuroses, they have a common pathogenic basis, but the degree of mental disturbance, with ensuing deterioration, does not bear any relation to the severity of the antecedent neurotic condition.

Hysterical Insanity.—Hysterical insanity is a psychoneurosis which is characterized by the ease and rapidity with which psychic disturbances appear and disappear in connection with physical disorders, such as anæsthesias, paræsthesias, paralyses, convulsions, and anomalies of secretion, without marked intellectual disturbance.

Etiology.—Hysteria develops upon a morbid constitutional basis, defective heredity occurring in seventy to eighty per cent. of cases. Women are more often attacked than men. Defective training and education are important causative factors. Mental stigmata, such as irritability, indolence, waywardness, and sudden emotional changes, are often recognized in early life. Chorea, headache, defective speech, and other disorders have sometimes been noticed. Uterine disease is undoubtedly a potent factor, but the rôle played by the disturbance of the female sexual organs is not clear. The nature of hysteria is still obscure. The best explanation is offered by Möbius, who characterizes hysteria as "a congenital morbid mental state where diseased bodily conditions are produced by ideas," which are strongly emotional and sometimes of indefinite content.

Symptoms.—The symptoms of hysterical insanity are psychical and physical. The psychical are those continuously present during the interparoxysmal period, while the dreamy states characteristic of the crises or attacks, appear only in the paroxysmal periods.

Psychical Symptoms. Patients are usually deficient in intellect, although sometimes well endowed as regards artistic attainments. They apprehend clearly and observe correctly their environment, especially its defects. Judgment is always impaired, although patients may appear bright and vivacious. They are attracted by anything new, adopt peculiarities in dress, become zealous adherents of various religious sects, and keenly enjoy anything sensational. Their memory is retentive and perception unimpaired, but they are prone to misrepresent, amplify, fabricate, crave sympathy, and create sensations.

The mental life is largely controlled by the emotions, which are subject to frequent and abrupt changes. Emotional instability and lack of self-control are shown by sentimentality, irritability, capriciousness, and frequent alterations of mood, which at one time is joyous, and the next tearful. The intense egotism and ever-wakeful self-consciousness are characteristic, and are often associated with a morbid introspection, which induces a continual watching of the mental and physical processes. Thoughts of self dominate, and no attention is paid to the interests of others. Trifling discomforts receive exaggerated attention, and painful sensations linger long after the removal of the cause. The whole life seems to centre about their disease. They become fond of invalidism, consult numerous physicians to whom they minutely detail their symptoms, and are ready to adopt any new method of treatment, even if attended by considerable suffering. A certain class of patients are continually tormented by terrible thoughts, ungrounded fears, frightful dreams, alleged hallucinations, etc. Threats and sometimes melodramatic attempts at suicide are made, such as tying a ribbon about the neck, jumping into shallow water, etc.

The enfeeblement of the will may be shown by increased susceptibility to external influences. Ordinary acts, such as speaking, writing, walking, eating, etc., become difficult, and may render the patient unfit for the ordinary avocations of life. Patients are often obstinate in their adherence to demoralizing influences, occasionally subjecting themselves to pain and great discomfort for insufficient reasons, even refusing to speak or take nourishment. Their conduct accords with their prevailing mental state, and is unstable and erratic. A longing for adventure and a desire to pose are characteristic. Some are frank and vivacious in manner, others reserved and bashful, or silly and sentimental. They have little disposition for earnest work, lack perseverance, become easily exhausted, and always spare themselves. On the other hand, they spend much time with trifles, arranging and rearranging bric-a-brac and dilly-dallying with their toilet. The vehemence of the patient's expression does not correspond to the intensity of the emotions, as it is not unusual to witness copious weeping, or even fainting during the recital of sufferings which have no existence except in the vivid imagination of the patient.

These mental symptoms merely give a general clinical picture of hysterical insanity, but each case presents distinct peculiarities and should be studied individually.

Physical Symptoms. The physical symptoms of hysterical insanity are more conspicuous, and are generally regarded as more important than the mental. They consist of certain functional disturbances, such as paralyses of different limbs, choreiform movements, contractures, localized and general convulsions, aphonia, impairment of speech, numerous sensory disturbances, including paræsthesias, anæsthesias, hyperæsthesias, various visual disorders, globus, clavus, singultus, fainting spells, loss of appetite, obstinate vomiting, and disturbance and anomalies of secretion. These are dependent in appearance, persistence, and departure upon psychic influence, and do not follow any anatomical or physiological rules. Convulsive movements, or hemicrania, can often be made to disappear by pressure upon the eyeballs. An unexpected dash of cold water upon the face, or firm pressure over the ovaries or hypogastric region, often causes the disappearance of paralyses and contractures. Bedridden patients can sometimes be rapidly aroused by a sharp command, new environment, or as a result of some sudden freak. The transformation is, however, generally of brief duration, and even still more distressing symptoms than the former may return.

A prominent feature is the disappearance of the symptoms when the patients believe themselves unobserved, and the reappearance of the same when their illness is referred to or when confronted by a physician. Further attempts at dissimulation are observed in efforts to produce ulcers, pricking the gums to make bloody sputa, or secretly removing fæces to convince the physician that the bowels are occluded, etc.

Psychic Disturbances.—Of the transitory psychic disturbances, the dreamy states are the most prominent. They are characterized by marked clouding of consciousness, which may either follow, take the place of, terminate in, or be interrupted by an hysterical convulsion. The patients lie quietly with relaxed limbs, occasionally showing slight rigidity, breathing quietly, with slow pulse rate, and the eyes turned upward or rotated late-

rally. They are irresponsive, except to a powerful stimulus, which sometimes entirely arouses them. Such a condition may last for from a few hours to weeks, and is only interrupted by occasional convulsions and short lucid intervals, during which food may be taken. Sometimes the dreamy state simulates ordinary or profound sleep, with deep and regular respiration, but is usually of short duration, with gradual awakening, and no recollection of the disorder. Somnambulism may be considered a phase of the dreamy state, and may occur during the natural sleep of hysterical patients or during the daytime, either independently or in connection with a convulsive attack or fits of laughing or crying. Another form of dreamy state appears in connection with the delirious excitement of a severe hysterical attack. Consciousness is markedly clouded, and there are many hallucinations. Ecstatic mystical visions are seen or frightful ordeals experienced. The dominating emotional state is indicated by the manner and expression.

Younger patients present still another form of the dreamy state, in which the clouding of consciousness is moderate and does not prevent the recognition of their environment. They usually exhibit a happy, unrestrained mood, occasionally with marked silly behavior. All sorts of foolish pranks are performed, such as the imitation of cries and behavior of animals, screaming, etc. The morbid characteristic of this apparently conscious behavior is emphasized when, as occasionally happens, it terminates in a light convulsive seizure, followed by a brief period of depression, with no remembrance of antecedent events.

The memory of events prior to and during these different dreamy states is always much confused, and sometimes completely abolished. Some cases present a sort of dual personality. Sometimes during an attack a particular period of a patient's life is lived over again. Such alterations of personality arise only under the influence of auto-suggestion.

There still remain to be mentioned certain mental disturbances of brief duration, which are characterized by a gloomy and anxious mood, sometimes accompanied by delusions of self-accusation and indefinite hallucinations. Conditions of excitement arising as the result of jealousy, spite, and the like, more frequently appear in the form of passionate outbreaks with violent abuse, although sometimes accompanied by a tendency to destructiveness. They usually pass off in a few hours.

The course of hysterical insanity is usually protracted, extending over many years, during which the individual symptoms may show the most varied changes.

Diagnosis.—The diagnosis is far more difficult in hysteria in the male, and especially in differentiating the insanity of degeneracy. In the degenerate state the course is more uniform, and the dreamy states and various physical symptoms are absent. The differentiation from epilepsy is considered under that disease, but it is necessary to differentiate the dreamy states of hysteria from those of epilepsy. In the dreamy states of hysteria the behavior is quiet and the emotional disturbance slight, while in epilepsy there are great irritability, fear, and frequently violence. In the interparoxysmal periods the hysterical patient usually displays rapid emotional changes, and the symptoms depend upon external influences, while in epilepsy the characteristic irascibility, violence, and evidences of mental impairment are dependent upon the seizures.

Prognosis.—While the prospects are good for the disappearance of the several attacks, it is not favorable for the future of the patient, who is apt to suffer from a recurrence of the same or other hysterical symptoms. Remarkable temporary cures are sometimes effected by the removal of prominent exciting causes, such as disease of the sexual organs, defective manner of living, etc. Hysteria in the male, with hypochondriacal complaints, is resistive to all modes of treatment.

Treatment.—The element most essential to the successful treatment of the disease lies in the personality of the physician, who must inspire the patient with confidence. Isolation of the patient is essential, except in the lighter forms of the disease, and can best be effected in a small sanatorium under the direct supervision of a physician, although the same object may be accomplished at home by the aid of an efficient nurse. Under any circumstances the patient should be given over entirely into the hands of the physician, who is then in a position to bring about great improvement, and often recovery, by the use of simple remedies. Careful physical examination should, of course, be made of each patient, and a general tonic regimen prescribed if necessary. Of the mechanical measures for the treatment of hysteria, the most important are hydrotherapy, electricity, massage, exercise, and employment.

There are various methods of applying water, but the best results are probably obtained by the use of the douche and spray, drip sheet, and by ablution or plunge. Collins regards the tonic bath as best adapted to the treatment of hysteria. In the use of the bath hysterogenetic zones should be protected, in order to avoid inducing an attack of hysteria, and reaction should be facilitated by passive movements, walking, or light gymnastics, continued for twenty or thirty minutes after the bath. It is, of course, desirable where possible to avail one's self of the facilities afforded by a hydriatic institution, but the same treatment can be accomplished at home with water under sufficiently high pressure, by the use of a detachable hose and tube. The faradic current affords the best method of applying electricity, and is frequently of service in improving the nutrition and relieving the anæsthesia and hyperæsthesia. The daily routine should, in addition, include rest and relaxation, with proper exercise, the latter best secured by massage, gymnastics, and out-of-door exercise. Disease of the genital organs may require surgical interference. Removal of diseased or even normal ovaries has been followed by improvement, but such drastic procedures are now generally regarded as unwarranted and of more detriment than benefit. Hypnotism is of value, but it should be borne in mind that its use is apt to establish an undesirable dependency of the patient upon the physician. In mild cases suggestive therapeutics is of value in overcoming individual hysterical symptoms, such as paralyses, sensory disturbances, and tremor. In the treatment of hysterical attacks, the patient can be restored to clear consciousness by a brisk command, or, if this fails, by a dash of cold water upon the face, the use of the electric brush, or pressure upon the ovaries or upon the hysterogenetic zones. Inhalation of chloroform may be necessary in some exceptionally severe cases.

Epileptic Insanity.—Epileptic insanity is a form of mental derangement accompanying epilepsy, characterized by a varying degree of mental deterioration, evidenced by emotional instability, impulsiveness, moral perversion, and impairment of the intellect and memory, with incapacity for production. It also includes certain periodical disturbances, denominated transitory ill-humor and dreamy states. The mental disturbances, however, which occur in epilepsy present great differences. Some individuals suffer from distinct epileptic attacks, and in the intervals do not exhibit the least mental abnormality, although as a rule the neurosis induces more or less mental impairment. Milder conditions of irritability and mental weakness may not be very striking, yet they are apt to pass into severe mental disorders.

Etiology.—Defective heredity is the most frequent cause of epilepsy, appearing in eighty-seven per cent. of cases in which a complete family history was obtained, while in over twenty-five per cent. epilepsy had existed in the parents. Alcoholism is another potent causative factor. Neumann states that in nearly twenty-four per cent. of cases one or both parents had been addicted to the excessive use of alcohol. The abuse of alcohol as a cause of epilepsy is evidenced by the frequency with which it appears in chronic alcoholism, and the great intolerance to its use manifested by epileptics. Various physical stigmata, evidences of congenital defect, such as malformation of the skull, microcephaly, hydrocephalus, etc.,

should not be regarded as actual causes, but rather as excitants of convulsions. In a certain number of cases a direct relation may be traced between head injuries and epilepsy, but the numerous scars so frequently found upon the head are more frequently the results than the causes of the malady. It is not uncommon for epilepsy to develop at puberty, at the period of involution, and in senility.

Pathology.—As all epileptics are not insane, the pathology of epileptic insanity must be based upon the seizures plus the heredity, including constitutional defects, and other factors with whose nature and influence we are not sufficiently acquainted. Probably the most important anatomical changes found in the epileptic brain are the increase of neuroglia tissue, especially in the superficial layer of the cortex, and sometimes in isolated foci, and sclerosis of the cornu ammonis. The consensus of opinion points to a toxic condition arising from faulty metabolism as the cause of the periodicity of the seizures, and the tendency of the nervous system periodically to react to any continued irritation, the convulsions being immediately due to the deleterious substance found in the blood. Epilepsies, however, due to brain lesions, cannot be explained on this toxic basis.

Symptoms.—Epilepsy may exist for years without obvious mental impairment, but in a majority of cases intellectual activity is impaired, though in a much less degree than the emotions and volitions.

All cases of epileptic insanity usually present more or less pronounced intellectual, moral, and emotional disturbance. Apprehension, however, is fairly keen, orientation normal, consciousness generally clear, but attention is usually impaired.

Hallucinations are infrequent, except in the dreamy states. When present they are generally of a religious character. Illusions frequently occur for a short time before and after attacks of grand mal.

Delusions are uncommon except in the dreamy states, when they are either accompanied by, or dependent upon, auditory and visual hallucinations, and are almost invariably of an ecstatic or terrifying character.

Ideation is limited, and there is a strong tendency in conversation to detail and circumstantiality. Essential points in narratives are obscured by a multitude of data and irrelevant and unessential accessories. Connection usually is not lost, but the aim is attained by circuitous paths.

Judgment is impaired, the degree depending upon the amount of mental deterioration. The true relation of ideas is obscured or even lost, and the most senseless and fantastic schemes are frequently devised, with inability to recognize the incongruity between the plans and the limited ability. Epileptics generally, however, have some insight into their condition, and recognize in a measure the nature of their disabilities. A few deny seizures.

Memory is always more or less impaired. Prominent events frequently repeated may be recalled, but events, whether recent or remote, connected with the general course of life, are more or less indistinct and hazy.

The narrowness of thought, due principally to faulty memory, naturally leads to a great prominence of self, especially noticeable in the conversation of epileptics. Another striking symptom is the religious content of thought, resulting in the quoting of Scripture, engaging in prayer, exhorting associates, reading the Bible, etc. Many are curious and meddlesome, and continually interfering with others.

The majority of epileptics show great emotional variations, but ordinarily they present a state of emotional indifference. Increased irritability, however, usually exists, and is manifested just before or after a seizure by frequent outbreaks of excitement, and alternations from elation to depression, or the reverse. Sudden uncontrollable impulses are frequent and characteristic symptoms of epileptic insanity. Assaults are made with or without provocation, and severe and dangerous injuries inflicted. Homicidal acts are not infrequent, but suicidal impulses are rare.

Apart from morbid impulses, the conduct is usually good. The ordinary proprieties of life are observed unless deterioration is profound.

Epileptics as a class have but little or no initiative, but if carefully directed are capable of doing routine work. But little capacity is shown where the higher grades of mental and physical training are requisite.

The seizures are the most important physical symptoms in epileptic insanity, and may assume the type of grand or petit mal. The former may be preceded by an aura, followed by a cry, a fall, and tonic followed by clonic convulsions, usually localized at first, but rapidly becoming general. During the convulsions, which may last from two to ten minutes, consciousness is lost, but gradually returns within a period of a few minutes to several hours. Twenty to several hundred attacks of grand mal may occur in status epilepticus without restoration of consciousness. In petit mal there is a transitory loss of consciousness, either with or without slight convulsive movements, usually lasting one or two seconds. The reflexes are abolished during the convulsions, and in some cases are not restored for some hours.

The speech of epileptics is often drawling, jerky, or strongly accented. Organic and functional disease of the heart is quite frequent, and the pulse rate is often increased.

The following mental states are recognized on an epileptic basis: 1. Transitory Ill Humor. 2. Dreamy States, in which are included Pre- and Post-Epileptic Insanity, Epileptic Stupor, Anxious Delirium, Conscious Delirium, and Dipsomania.

1. Transitory Ill-Humor. This form is characterized by the extraordinary resemblance which the separate attacks bear to each other, presenting the same recurring complaints, delusions, and impulses. The attacks are of varying intensity, and often come on in the morning. Patients awake peevish, faultfinding, irritable, threatening, and quarrelsome, often commit unprovoked assaults, break glass, destroy furniture, and use profane and obscene language. Occasionally they display vague hallucinations and express persecutory delusions. These attacks usually occur after a seizure, but may precede it, the convulsions generally clearing the mental atmosphere. The average duration is a few hours, but may persist a week or more. Amendment is gradual, and is followed by a striking feeling of well-being.

2. Dreamy States. The essential feature characterizing this form of mental disorder is the more or less profound clouding of consciousness. Transitory ill-humor often precedes these dreamy states, and there is no sharp line of demarkation between the two.

Pre-Epileptic Insanity often presents all sorts of morbid sensory impressions, such as flashes of light, impairment of vision, indefinite or strange sounds, peculiar odors, paræsthesias, etc. There may be associated fixed ideas, mistaken identifications, monotonous repetitions of words or phrases, involuntary or grotesque movements, and imperative impulses to strike, kill, destroy articles, etc. In a short time consciousness becomes more and more clouded, and the convulsions begin, terminating in a stuporous condition, lasting for hours or days.

Post-Epileptic Insanity is more common than the former and is characterized by a deep dazedness lasting for hours or even days. Difficulty of comprehension, confused speech, partial or complete disorientation, aimless wanderings, collecting of rubbish, and drinking of urine are often prominent symptoms. Sensory disturbances are undoubtedly present, but cannot be ascertained from the patient on account of the complete amnesia. The normal mental and emotional attitude is generally gradually regained.

Psychic Epilepsy. Mental and emotional disturbances characterized by suddenness of onset and marked clouding of consciousness, occurring in place of, or following, a seizure, are denominated psychic equivalents. These conditions generally come on without warning, and are more liable to occur in patients who have seizures at long intervals. The essential feature is the disturbance

of consciousness. Patients are confused, move and act in a mechanical or automatic manner, and often present evidences of illusions, hallucinations, and delusions. They wander aimlessly about, do not appear to recognize any one, and reply incoherently to questions. Fixed and peculiar positions are sometimes assumed, and occasionally there is heightened excitement or gloomy stupor, during which they expose their person, masturbate openly and shamelessly, and attempt sexual assaults. Some cases of somnambulism occurring in epileptics should be regarded as a form of psychic epilepsy. The numerous criminal acts committed during these periods demonstrate the extreme importance of the recognition of psychic equivalents.

The history of previous attacks of grand or petit mal, the absence of motive or attempt at concealment, and either the complete amnesia, or hazy recollection, of what has happened should render the diagnosis clear.

Epileptic Stupor. In epileptic stupor the clouding of consciousness is often extreme and prolonged. It usually lasts one or two weeks, but may last much longer. Patients may eat, speak, or perform certain mechanical movements, but without clear understanding. The same attitude is maintained for hours or even days, and the expression justifies the inference that the emotional sphere is dominated by confused terrorizing delusions, although sometimes the demeanor indicates happiness, or religious ecstasy. Patients are often indifferent, unresponsive, remain in bed, and soil themselves. Sometimes active resistance is shown if they are disturbed, and impulsive attacks and suicidal attempts are not infrequent. Sensibility is blunted, reflexes are abolished, and sometimes a temporary catalepsy is seen. Food is either wholly or partially refused. Recollection of the events is largely or completely lost. Restoration is generally gradual.

Anxious Delirium is more frequent than stupor, and may occur independently of the convulsive seizures. It develops suddenly, varies in duration from a few hours to two weeks, and is often preceded by fixed and recurring hallucinations. Orientation is lost, apprehension clouded, and hallucinations and delusions are usually of a terrifying character. Patients assert that they must be punished, have committed murder, are surrounded by devils, etc. They wade in blood, their parents are perishing, everything is being blown into atoms, etc. Sometimes God and Christ appear, and carry them in splendid chariots to heaven, but ecstatic feelings are transitory, and the dominating ideas are those of dread and fear. Some patients commit brutal and almost incredible outrages, while others try to run away to escape horrors and dangers which confront them. Consciousness is generally gradually restored, but sometimes clears up suddenly after a prolonged sleep.

Conscious Delirium is a rare form, which either follows a seizure or appears as a psychic equivalent. Patients appear conscious, but apprehension is greatly clouded. Answers to simple questions are coherent and relevant, but close observation reveals confusion and disorientation. The disposition is irritable, usually anxious, but sometimes elated, and delusional ideas lead to impulsive acts. Crimes such as arson, theft, desertion, and sexual assaults are committed, with apparent unclouded consciousness, but without insight into their significance. The attacks may last weeks or even months, or frequent attacks may occur at brief intervals.

Dipsomania. Alcohol is a frequent cause of epilepsy, and often arouses a latent epileptic endowment. Dipsomania resembles epilepsy in many ways, inasmuch as there is a paroxysmal impulse to the senseless abuse of spirituous liquors. Attacks begin with symptoms resembling periodical epileptic distemper. There are uneasiness, anxiety, despondency, irritability, anorexia, insomnia, and sometimes sexual excitement, accompanied by an apparently irresistible impulse to quiet morbid sensations by indulgence in alcoholic stimulants. Notwithstanding the large quantities of alcohol ingested, complete drunkenness is rare. After a longer or shorter period, drinking is suddenly discontinued, and is often followed by nausea, vomiting, catarrhal gastritis, unsteady movements, and tremor. Occasionally delirium and hallucinations supervene. Only a hazy recollection is generally retained of the debauch, and there is often deep contrition, with abhorrence and abstinence from alcohol until the next outbreak.

Diagnosis.—The occurrence of the characteristic convulsions generally renders the diagnosis of epileptic mental disturbance easy, but epileptic insanity should be differentiated from hysteria, dementia paralytica, and the katatonic form of dementia præcox.

In hysterical insanity there is more diversity in the development of the seizures, which are more frequently induced by external influences than in epilepsy. Consciousness is never wholly abolished, and sudden involuntary falls, with serious injuries and biting of the tongue, are almost never seen.

Dementia paralytica sometimes begins with epileptiform seizures, but other symptoms, such as impaired pupillary reflex, characteristic speech disturbance, ataxia, inco-ordination, etc., clear up the diagnosis.

The epileptic dreamy state may be mistaken for katatonia. In the latter we find negativism, muscular tension, passive resistance, correct execution of commands, mutism, stereotypy, with less disturbance of perception and orientation. In epilepsy there is anxious resistance with indifference to orders, associated with frequent assaults, atrocities, etc.

Prognosis.—The prognosis of epileptic insanity depends essentially upon its cause and time of onset. Pure epilepsy may disappear spontaneously. Epilepsy dependent upon gross brain lesion is incurable. When following head injuries some recoveries have been recorded. Improvement rarely occurs in cases in which attacks of stupor or dreamy states have occurred. In epilepsy developing late in life the outlook is very unfavorable. In alcoholic epilepsy treatment often results in cure or great improvement. As regards life, Dr. Worcester has found that sixty per cent. of epileptics die as a result of their seizures.

Treatment.—In cases in which there are undoubted cranial injuries or focal diseases, surgical interference is demanded. The results are generally unsatisfactory, although long-continued improvement has resulted from simple ventilation of the brain by trephining. Sources of reflex irritation, such as nasal polypi, decayed teeth, ingrowing toe nails, phimosis, paraphimosis, etc., should be removed. Careful attention should be paid to the alimentary system and the diet. The latter should be nutritious, but the excessive use of meat is to be avoided. As every epileptic is more or less intolerant of alcohol, complete abstinence is essential. While innumerable remedies have been used in the treatment of epilepsy, no drug exerts so powerful an influence over convulsive attacks as the bromide of potassium, or combinations of bromine with sodium or ammonium. The former may be given combined with small doses of Fowler's solution for long periods of time without inducing bromism or producing the troublesome acne. Some patients are intolerant of its use, becoming more irritable and quarrelsome; others are reduced to a stuporous condition, resulting in rapidly increasing mental deterioration. Prolonged experience is requisite to select cases suitable for protracted bromide treatment, as each case must be judged individually, but it should be tried in all cases.

When status epilepticus occurs, compression of carotids should be tried, and the administration of chloral hydrate and bromides by enema.

Chorea Insaniens.—Although psychical disturbance is rarely absent in chorea, fortunately in the majority of cases it is very slight, and consists principally of disturbances of memory and attention and of emotional instability, evidenced by irritability, peevishness, and depression.

In chorea insaniens these psychic defects increase until a real psychosis is developed. The subjects are usually young females at the age of puberty, although the disease may occur as the result of pregnancy. The mental symptoms may precede the choreic movements, but they usually occur after the motor phenomena have become

intense and violent. Commonly the case begins as one of ordinary chorea, with sudden development of the special symptoms. Within a short time the choreic movements become general, violent, and almost incessant, and active delirium speedily develops. In a less aggravated form of the disease a delusional condition is developed, with extreme loquaciousness. Fever is generally but not invariably an accompaniment, and the temperature sometimes reaches 107° F. Cases accompanied by high temperature usually terminate fatally. The excitement generally subsides in a week or two, and is followed by dulness and apathy, and sometimes by persistent delusions. Nourishment has often to be administered by the rectum or by a feeding tube, and stools and urine are commonly passed unnoticed. This condition slowly passes away, but may last weeks or months after the chorea has ceased, and it may be permanent.

Pathology.—The disease is probably due either to the absorption of septic material or to a toxin. Meningitis or vascular changes in the brain, and endocarditis have been found in the few autopsies recorded.

Diagnosis.—The violence of the choreic manifestations and the character of the mental symptoms should be sufficient to differentiate it from other forms of chorea.

Prognosis.—Osler stigmatizes chorea insaniens as a "terrible affection." Over forty per cent. of the cases terminate fatally.

Treatment consists in maintaining nutrition, securing rest, quieting excitement by hypnotics, and the prevention of injuries by the use of a padded bed.

Hereditary Chorea.—(Synonyms: Huntington's Chorea, Adult Chorea, and Chronic Progressive Chorea.)

Although this affection was described as early as 1842, and later in 1863, the first paper to attract the attention of the medical profession was written by Dr. George Huntington, of New York, in 1872, by whose name it is commonly known.

This disease is a comparatively rare one, and affects both sexes equally. It generally occurs between the ages of thirty-five and forty, although it may occur sooner or later. Cases, however, are infrequent before thirty and after forty-five. Generally there is a history of the disease in the preceding generation, but if a member of the family is spared, his or her descendants are usually exempt from the disease.

A striking feature is that of the motor phenomena, which differ from the movements in Sydenham's chorea, inasmuch as they are slower and more inco-ordinate, and lack the brusk, quick, and jerking character. The movements at first are of slight intensity, and are limited to a few groups of muscles, but they gradually increase in intensity and extent, and finally become general, involving the upper and lower extremities, trunk, and facial muscles. Speech and deglutition are affected, and the gait is characteristic, presenting constant variations, consisting of erratic, dancing, swaggering, and precipitate movements, during which the patient almost falls, before he recovers himself. In the early stages of the disease there is some ability to control the movements and perform voluntary acts, but in the later stages efforts to control the movements result in still more violent contortions. Sensation is unaffected, but there are increased myotatic irritability and sometimes ankle clonus. Patients rarely complain of fatigue, despite the incessant and violent movements, but finally take refuge in bed, sometimes before the ability to walk is lost.

Mental disturbance is an invariable accompaniment, generally occurring in the terminal stages of the disease, but cases occur in which the mental symptoms precede the choreic manifestations. An analysis of the mental symptoms of the nine cases under observation at the Connecticut Hospital for Insane gave the following results: Three of the patients manifested mental symptoms similar to the expansive form of general paresis, presenting a condition of gradually increasing cloudiness of consciousness, partial disorientation, general sense of well-being, irritability with restlessness and sometimes violence, but with generally a happy and contented disposition, associated with delusions of wealth and power. Two were anxious, fretful, and aggressive, with moderate excitement at irregular intervals. Their delusions were of a persecutory character, with a rather sad and anxious disposition, tinged with expansiveness. Consciousness was clear and orientation undisturbed at first, but they rapidly became demented, presenting complete disorientation, planless activity with occasional irritability, clouded consciousness, and extremely limited powers of comprehension. Two others were suspicious and apprehensive, exhibiting well-marked anxious depression, with persecutory ideas and pronounced suicidal impulses. Consciousness was clear and orientation preserved in both of these cases for many years, and they became demented very slowly. The two remaining cases presented symptoms similar to those of the hebephrenic form of dementia præcox, manifesting a marked change of disposition at the onset, evidenced by shyness, sullenness, and irritability, followed by depression, with hallucinations of sight and hearing and delusions of a depressive character. Clear consciousness and coherence of thought were maintained for some months, but both deteriorated rapidly, presenting poor attention, defective judgment, increased sexual desires, and heightened self-feeling, followed later on by indifference, apathy, and stupidity. All eventually terminated in progressive motor and mental enfeeblement.

Pathology.—Oppenheim considers the essential pathology to be miliary encephalitis, cortical and subcortical, followed by atrophy of the cortex. Clarke summarized his findings in two autopsies as follows: "Widespread but partial degeneration of the cells of the cerebral cortex, especially of the second and third layers, most marked in the frontal and motor convolutions, together with an increased amount of interstitial tissue and number of neuroglia cells." Autopsies of three cases at the Connecticut Hospital for the Insane gave similar diffuse lesions in the cerebral cortex.

Diagnosis.—The disease is, of course, easily recognized when it is hereditary, but its recognition is difficult in cases without this peculiarity. The age at onset, increased knee-jerks, characteristic gait, progressive character of the disease, with the obvious mental deterioration, are generally sufficient to differentiate it from ordinary chorea.

Prognosis.—Hereditary chorea is an incurable disease, and patients ultimately become bedridden. It lasts from ten to thirty years, and the progress is toward motor and mental, enfeeblement. Death usually occurs from some intercurrent affection.

Treatment.—Nothing has thus far been found of any value in the treatment of the disease.

William E. Fisher.

XV. INSANITY: DEMENTIA PRÆCOX.—(Synonyms: Insanity of Pubescence, Insanity of Puberty and Adolescence, Hebephrenia, *Idiotisme, Folie de la Puberté, Demence Précoce des Jeunes Gens.*)

Descriptive Definition.—Dementia præcox is a developmental disease of the mind which has its starting-point almost exclusively in adolescence and whose early stages are confined to that period. Its underlying disease-process is an enfeeblement of the heretofore normal intellect—a slow decline of mental power. It ends, generally after a few years, in a state of permanent mental degeneration, which varies in extent and degree, but which, as a rule, involves the mind in more or less complete and permanent disorganization. Its salient features are variable mental disturbances—often profound—which appear as protracted "attacks" in the course of the disease and consist in the main of irregularly occurring, episodical symptom-groups, chiefly stupor with or without katatonia or catalepsy, chorea insaniens, mania, melancholia, confusion, and pseudo-paranoia. A marked tendency to explosiveness and impulsive acts, contradictory phenomena, and remissions simulating recovery are characteristic of the disease. These various phenomena frequently mask for a time the latent and essential dementia.

The varieties and symptom-groups which are peculiar