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HANDBOOK

OF

INSANITY

FOR

Practitioners and Students

BY

DR. THEODORE KIRCHHOFF

PHYSICIAN TO THE SCHLESWIG INSANE ASYLUM AND PRIVATDOCENT AT THE UNIVERSITY OF KIEL

ILLUSTRATED WITH ELEVEN PLATES

TEACHING AND RESEARCH LABORATORY, MAUDSLEY HOSPITAL MEDICAL SCHOOL.

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GENERAL PART.

HANDBOOK OF INSANITY.

I.

THE ANATOMICAL BASIS AND THE LOCATION OF MENTAL DISTURBANCES.

Introduction.

PSYCHIATRY is the science of mental disturbances and their treatment. It is an empirical science, whose contents are furnished by external and internal experience, *i.e.*, by objective observations on the patient and by the subjective observations which the patient makes upon himself. The internal experience escapes the physician much more readily than in other medical sciences. The mental processes of other individuals are only in part accessible to observation, in so far as they can be communicated by speech, gestures, and actions. The internal bodily activity which takes place, for example, between a stimulus and a sensation, and is called psychophysical, occurs in an intervening link, *viz.*, the brain or organ of psychophysical activity. Here is the boundary tract in which the links in the chain of stimulus and sensation come in contact. In the investigation of this tract, psychiatry requires the aid of psychology.

In so far as the mental processes depend, outside of this boundary tract, upon the basis of the physical functions, especially upon the brain, a field of investigation which is positively comprehensible is open to observation, and we are, in a measure, justified in looking for the symptoms of a mental disturbance in changes of the physical basis. In order to understand the symptoms we must

first endeavor to find the location and character of the anatomical changes. But anatomy alone does not suffice for a thorough understanding. We must not desist entirely from the attempt to investigate the intermediate processes which lead from external to internal experience. Hence the relation of bodily and mental disturbances must be made clear by the intimate association of cerebral pathology and psychopathology.

The Brain as the Site of Normal Mental Processes.

Anatomically the brain is the rallying-point of almost all the spinal systems of fibres; in addition the most varied association-systems are present in the cerebrum itself. Comparative anatomy teaches that relatively to the size of the body the size of the cerebral lobes increases, in general, with the intelligence of the animal. The same relation is shown in the increasing development of the surface of the brain by fissures and convolutions, and for this reason the cortical gray matter is universally regarded as an especially important part of the cerebrum. As a rule, individuals of great mental activity possess very large brains, with a marked development of the surface. It is probable that great importance also attaches to the thickness of the cortex.

Developmental history shows that the development of the surface and the mass of individual parts does not always coincide in point of time with the appearance of higher mental activities, but that it precedes the latter in a certain measure. The association-fibres in the cerebral cortex develop within the first year of life, and it is not until the age of seven to eight years that they attain the arrangement which is permanent in adults. The development of these fibres occurs latest in the frontal lobes.

A further argument in favor of the view that the mental processes take place in the brain is furnished by self-observation during mental processes, which are accompanied by very feeble sensations in the brain.

The assumption that the brain is the site of mental activity is rendered very probable by the above statements, and this is confirmed by our experience concerning morbid changes. Before proceeding to the consideration of pathological conditions, we must first recall some data concerning the developmental history and structure of the brain.

Conclusions from the Developmental History and the Structure of the Brain.

The mode of development of certain brain fissures is important. The Sylvian fissure is associated intimately with the development of the basal ganglia, in whose vicinity the cerebral wall grows more slowly and, therefore, remains in a depression; this part is known as the Island of Reil. The three so-called total fissures, *viz.*, the hippocampal, calcarine, and occipito-parietal, are developed in an entirely different manner. They appear in the third and fourth months of fœtal life. The hollow medullary tube of the embryo then possesses, at its anterior extremity, several vesicular dilatations; especially important is the most anterior or fore-brain vesicle, from which the two cerebral hemispheres develop. The mass of the thin wall of the fore-brain vesicle now grows more rapidly than the inclosing skull, which has become cartilaginous. Hence folds develop toward the side of least resistance, *i.e.*, into the cerebral ventricles; they extend through the entire thickness of the cerebral wall, and are, therefore, called total. As a permanent expression of this process the adult brain contains in the inferior horn of the lateral ventricle, and corresponding to the hippocampal fissure, the Ammon's horn or pes hippocampi major. In the posterior horn the pes hippocampi minor is found beneath the calcarine fissure. A prominence which corresponds to the parieto-occipital fissure, and is very distinct in the fœtal brain, is obliterated in the adult.

All the other principal fissures do not correspond to pro-

jections into the lateral ventricles, and are due to local elevations of the adjacent cerebral cortex. The coarser vascular arrangements are probably important, because the fissures contain the larger veins, and it may be assumed that the resistance of the latter gives rise to these cortical fissures.

But even the total fissures do not develop entirely on account of differences in the growth of the cortex. The parieto-occipital fissure is supplied solely by the arteria profunda cerebri, the hippocampal fissure by the arteria corporis callosi, and the course of the middle cerebral in the Sylvian fissure also indicates a connection between the

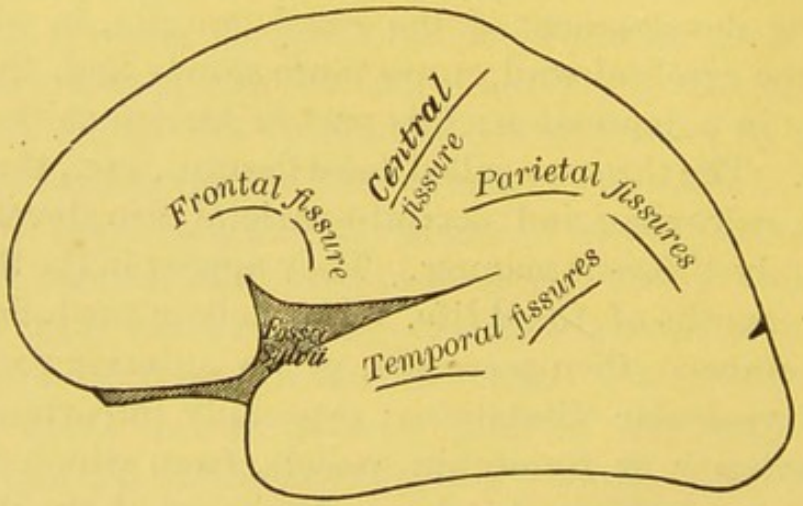


FIG. 1.

vascular development and the growth of the surface. Furthermore, the most important so-called cortical centres are situated around the fissures which appear earliest and are best supplied with blood.

In view of these data the significance of the fissures is easily understood. They may also be regarded, in part, as nutritive grooves, inasmuch as the vessels often enter the pre-formed fissures. The large size and extent of the pia mater probably depend, however, on the nutritive needs of the brain, which contains approximately one-fifth of the entire mass of blood in the body. Although the vessels do not cause the development of the fissures, the distribution of the former by different arrangements of the fissures must

exercise great influence on the activity of the corresponding parts of the brain, and it is probable that for this reason the activity of the same cortical regions will differ in different individuals. Hence arises the necessity of accurate topographical investigation of the cerebral cortex as regards the local differences in the healthy and diseased human brain.

In the third fœtal month the layer of gray matter is almost one-fourth the thickness of the hemispheres, but in the fourth month it diminishes to one-seventh. Various layers are found even before this period; a deeper layer of cellular elements often exhibits a wave-shape,

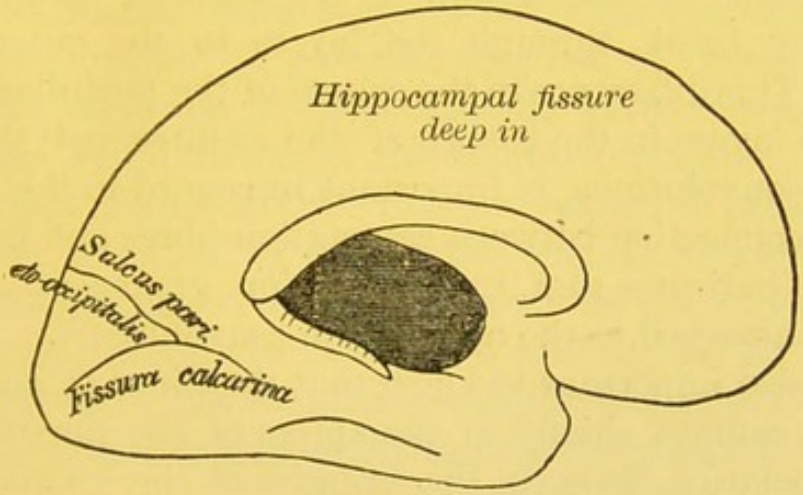


Fig. 2.

while the outer boundary still runs in a straight line. In the middle of the layer of cellular elements, and also in a deeper layer, light bands appear, at the latest during the fifth month. But some of the cellular layers unite and disappear during the later fœtal months, so that their permanent arrangement can only be studied in the new-born. In the fifth month a distinct nucleolus sometimes appears in the round nuclei of certain cell-layers; a few nuclei have short processes so that they appear angular.

Ganglion cells are only recognizable in the cortex of the fully developed fœtus; indeed, distinct boundaries of pyramidal cells are found only in infants of one to two months, and even here they are mingled with imperfectly developed cells.

LOGICAL LABORATORY C.A.

The simplest classification recognizes an external, middle, and internal layer. At the beginning the cells are arranged like a string of pearls from without, inward; or we may speak of a palisade-like or columnar arrangement of the rows of cells. This is most distinct during the first fœtal months; later the cells are arranged more closely together, and the longitudinal streaks are somewhat obliterated by the transverse layers. Even after the formation of the fissures, rows of granules may be followed close to the border of the cortex; if nerve-fibres have formed, they can usually be followed only to the middle layer, where they radiate like a brush, and thus remain parallel to the surface only at the trough of the fissures, while at the cap they break through the layers to the outer boundary. This difference in the course of the medullary fibres and cell-layers in the trough of the fissures and the apex of the convolutions is important in regard to the physiological connection between association-fibres and ganglion cells; it indicates that, in this relation, greater importance is to be attached to the apex of the convolutions.

It is also important to know that the fibres of the coma radiata radiate chiefly in the apices of the convolutions, the association-fibres in the troughs of the convolutions, and that the growth of these different systems together has given rise to the convolution of the cortex.

A few regions of the cortex can be distinguished by a special arrangement of the layers and cells. As a general thing, these regions also possess special functions. The centromotor region alone contains the so-called giant-cells; the speech region alone contains a large accumulation of spindle-cells; the visual region alone contains the peculiar lamination of the Vicq d'Azyr's stripes, and the assumed olfactory and tactile region possesses the peculiar structure of the hippocampal convolution and its appendages. The remainder of the cortex exhibits no striking differences.

I will not enter into a description of the important commissural systems. Apart from the association-fibres already mentioned, I will merely refer to the corpus cal-

losum, which connects the hemispheres. These two systems prove that definite regions of the brain are physiologically associated.

The Site of Mental Disturbances in the Brain Based on Pathological Anatomy and Explained by Psychological Considerations.

It must be our first object to ascertain to what extent focal diseases have aided in our knowledge of the location of mental disturbances. In so far as the lesions have interrupted conduction systems, they have not taught as much as disease of the centres, and it has been found that the interruption of certain systems of fibres leading from the cerebrum to the cerebellum gives rise to distinct slowness and difficulty of the mental functions. Among the large ganglia the optic thalamus seems to possess more intimate relations to the higher mental functions than does the corpus striatum, inasmuch as the former alone undergoes atrophy in congenital absence of the cerebral hemispheres. The disturbance in the intellectual development of individuals in whom the corpus callosum is absent or only very small, indicates that the higher mental processes are not dependent upon the frontal brain alone; indeed, in these cases, the occipital lobes are mainly atrophied. If the brain is imperfectly developed as a whole, as in some idiots, there can be no question of localization. Nor is any further conclusion warranted from irregular development in the cortical layers, unless it is circumscribed. For example, in a few idiots the frontal lobes contained only very narrow pyramidal cells, which were distributed irregularly, so that it was almost impossible to distinguish the layers. Here the imperfect mental development may be attributed to the imperfect development of the frontal cortex.

Description of Figs. 3, 4, and 5, which are made according to Ecker's brain-scheme, with the aid of the literature of the localization question.

12. Centre for disturbances in all sensory tracts.
13. Centre for alexia. Writing images. Word-blindness.
14. Visual centre; * indicates macula lutea.
15. Doubtful centre for smell and taste; in this vicinity, perhaps, also a tactile centre, including sexual feelings.

The reports of scattered cases in which, after complete destruction of one cerebral hemisphere, mental disturbances did not set in, have called attention to the possibility of vicarious activity of the other half of the brain, provided that both halves possess originally the capacity for exercising the same functions. The question of the co-ordinate value of the hemispheres is of the highest importance in the examination of the site of individual functions. The relegation of speech-disturbances to the left half appeared to prove their unequal value, at least in the exercise of their functions, while it allows the possibility of the development of this function in each hemisphere. For a time the notion of the unequal value of the hemispheres was supported by the observation that the left frontal lobe develops more rapidly and abundantly than the right. It was also shown that, in mental strains, the left forehead exhibits, on the average, a somewhat higher temperature than the right one. Not long ago the site of aphasia was confined strictly to the left inferior frontal convolution; at the present time other cortical regions are known to possess intimate relations to aphasia. These are situated in the vicinity of the visual centre in the occipital lobe, and of the acoustic centre in the superior temporosphenoidal convolution. It was also supposed that the localization of aphasia in the left hemisphere was rendered doubtful by the observation of cases of aphasia after lesions of the right hemisphere, but this doubt was relieved by the proof that the latter cases occurred in left-handed individuals, who favor the right hemisphere by the movements of the left hand.

The function of speech is complicated, and it is necessary to distinguish several varieties of aphasia. The loss of the power of hearing words causes word-deafness; that of reading, word-blindness; the loss of articulate speech

causes motor aphasia, and of the power of writing agraphia. The two latter groups contain the principal modes of expression of human speech. Gestures accompany speaking, and both are usually lost at the same time, so that pantomime need not be considered separately. The views which generally obtain at the present time are shown in Fig. 10, and comparison with Fig. 7 shows that the

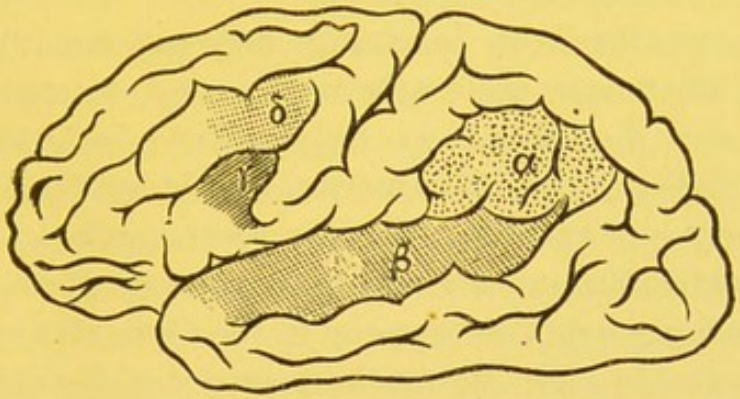


FIG. 6 (AFTER BALLET).—α, The region of print images; β, the region of language images; γ, the region of the speech images; δ, the region of writing images.

speech-centres are situated between the centres for movements and special sense-impressions. This arrangement seems to show the close relation of speech to all the other cortical functions. All four speech-centres are supplied by the middle cerebral artery, which, however, also supplies other centres.

The manifold character of the symptoms of aphasia is partly explained in the manner just indicated, but some cases cannot be explained by anatomical considerations alone, and require psychological examination. Speech is an internal and external process, composed of conceptions and words. Aphasia shows that the word does not necessarily accompany the conception. The word is a collective notion, arising from the combination of several varieties of images (auditory, visual, speech, and writing). These four principal components of the word are formulæ which every judgment utilizes, but, according to the tendencies and abilities of the individual person, they appear either in varying degrees or only in part in his deliberations. The purely internal processes of seeing, hearing, speak-

ing, and writing are entirely similar to those of external speech, but, as they are phenomena which occur within, they must be distinguished as internal speech. According as the internal mental processes are associated exclusively or chiefly with conceptions of language, print, speech, or writing, human beings may be divided into groups, *viz.*, into those who think in conceptions of language, print, speech, or writing.

Most people think in language conceptions. Auditory images of the words generally accompany our conceptions; we hear our thoughts. In only a few individuals are thoughts clothed in written words; these read the visual images of their conceptions. This is most marked in artists, who remember things in general as memory-pictures. In them speech-conceptions appear in the form of writing-images. Individuals in whom the memory of the movements of speaking or writing accompany the conceptions, speak or write their thoughts internally; the corresponding feelings of movement are closely associated with every thought. Cases of association of thoughts with writing-movements are probably rarer than those associated with speech-movements. But we generally employ alternately this or that form of internal speech, otherwise the loss of one form would entail complete loss of speech. As language-images are first acquired, the other forms are often of inferior importance. It is important, from this standpoint, to know the physiological brain formula of a patient, *i.e.*, the physiological variations in the course of his speech-conceptions which are due to his personality. Such considerations throw some light on the location of speech-conceptions and their disturbances. The early development and better nutrition of the left hemisphere, together with the better development of the centres of movement of the right hand, harmonize with the fact of the localization of the speech-centre in the left hemisphere. The other forms of disturbance, *viz.*, word-blindness and word-deafness, are situated more frequently on the right side, and thus the entire cortex remains the site of language-conceptions.

Language possesses the most manifold relations with the totality of mental life. Almost every mental disturbance is composed of the most complicated phenomena, and we find, accordingly, that the cerebral lesions of insanity are diffused over the cortex; the circumscribed lesions of other clinical complexes only indicate individual places, to which part-symptoms are due. Another inference may be drawn from the psychological consideration of language. There are hallucinations which belong to the most important signs of insanity; they are to be regarded as disturbances of conception, produced locally in the cortex, and in which the individual can no longer distinguish between the internal processes and their external causal conditions. In this sense we may distinguish internal from external vision, etc. If the ability to differentiate is wanting, an hallucination is present, dependent upon processes in those parts of the brain which preserve memory-pictures of the most varied kinds. Interpreted in this way every mental disturbance is essentially a disturbance of memory, the primary function of brain-matter.

Another observation which increases the importance of diffuse anatomical changes in speech-disturbances is the fact that diffuse diseases appear to be attended with much more marked disturbances of mental activity than cases in which there are focal lesions. A further peculiarity is the increase in the intensity of mental disturbances with the increase in the distance of the anatomical changes from the inferior frontal convolution and their approximation to the occipital lobes. It is certain that the more remote centres of sensory impressions in the occipito-temporal lobes (perception organ) are more important in regard to the higher mental activities than the adjacent motor-centres. In psychoses we must regard aphasic conditions, in so far as they develop in the cortex, as dependent, not on circumscribed, but on diffuse lesions.

Two cortical regions possess comparatively simple relations to the higher psychical functions, *viz.*, the centro-motor and visual centres. We must distinguish atactic and

paralytic disturbances according as the anatomical changes are situated in the parietal lobe, or in the central convolutions and paracentral lobules. Although we cannot assume that the higher processes of consciousness necessary to the execution of movements develop in these centres, nevertheless they constitute indispensable transition places for such processes. With every disturbance of function in any part of the cortex, there is naturally restriction of the contents of consciousness, inasmuch as the paths of mental processes extend over the entire surface.

We will now consider the disturbances of visual perception. If the cuneus and the first occipital convolution are injured, simple optical perception is destroyed; in unilateral lesions this disturbance is an hemianopsia, in bilateral lesions, complete blindness. After injury of the remaining occipital convolutions retinal impressions are no longer utilized psychically. This experience is confirmed by the visual hallucinations observed in insanity, especially in general paresis, and which preceded diffuse changes in these parts of the brain. We have to deal here with irritative processes in those parts of the cortex in which other lesions cause hemianopsia and blindness. This is connected with a peculiar theory concerning different degrees and forms of visual disturbances, and which has led to the assumption of a color, space, and light sense. The pathological changes are confined occasionally to certain ones of the different layers of the cortex. The superficial lesions of the cortex then cause loss of the color and space sense, while loss of the light-sense arises from deeper destructions of the cortex. This theory, however, has not been positively proven. There is no doubt, however, that the visual disturbances of dementia paralytica are localized in the region mentioned. This disease also presents other localizable phenomena, such as diminished intelligence and will, which are found associated with diffuse disease of the frontal lobes. They constitute the chief reason for regarding the frontal lobes as the organ of apperception for sensory impressions.

If we adhere to the principle that, in the main, diffuse lesions give rise to mental disturbances, it is evident that the frequent absence of gross anatomical changes is explained by imperfect methods of examination, although I believe that improved methods will disclose changes in only a limited number of psychoses. Little importance attaches to the view that certain psychoses are due to diseases of the skull and dura mater. Changes in these parts generally accompany pathological processes in the cortex. It must be remembered that the blood supply of the dura mater is not derived from the same vessels as that of the hemispheres. Pathological conditions in the pia mater are more constant concomitants of diseases of the cortex.

A more definite indication of the localization of mental disturbances is afforded by the following findings: In maniacal conditions red softening of the cortex is sometimes found in layers; the middle layer of the three which are visible to the naked eye being softened. On detaching the pia mater, the outer layer usually follows. More rarely the softening affects the outer layer itself, and then the surface appears rough when the pia mater is removed. In the rarest cases the softening occurs at the boundary of the cortex and white matter; an exactly similar condition is sometimes found in dementia paralytica. In the latter event the softening is due to degeneration of the medullary fibres. The softening in mania appears to be connected with the mode of ramification of the vascular trunks of the cortex in three superjacent series. In a measure we are then justified in regarding the site of softening as the site of greatest irritation. The restriction of anatomical changes to individual layers is also found in so-called gliosis and miliary sclerosis of the cortex; tumor-like proliferations of the glia in the superficial layer of the cortex, with formation of cavities and disappearance of nervous elements, leads to symptoms similar to those of dementia paralytica; in other cases small reddish gray dots are situated at the boundary of the gray and white matter. However, none of these peculiar changes enable us to draw

a conclusion with regard to the nature and mode of development of the mental disturbance.

Certain chronic changes are also mere results of the irritation, not its causes.

Somewhat more light is thrown upon the subject by regarding these changes as nutritive disturbances. One difficulty in attempting localization from this standpoint is owing to the fact that focal lesions very often produce irritative conditions in their immediate vicinity, and these lead to symptoms which are otherwise due only to diffuse lesions. Such remote effects are particularly apt to develop on a vasomotor basis.

The interpretation of certain psychoses as nutritive disturbances is facilitated by the following considerations. In the fœtus and early infancy tissue-necroses are more apt to occur in the cortex than in the basal ganglia, because in the former the length of the arteries is much greater and the vessels are much more delicate than the terminal arteries; they are, therefore, compressed more readily. These conditions are most unfavorable in the vessels of the Sylvian fissure and the entire motor region. The largest terminal branches of the pia mater pass to the white matter beneath the cortex, so that the necroses occur earlier and more extensively in the medullary layer than in the cortex. This medullary layer contains the layer of the association-tracts, and hence small lesions give rise to great gaps in the psychical processes. These observations, however, cannot yet be utilized in the explanation of different forms of disease.

A little attention must here be devoted to the consideration of unilateral hallucinations, which develop in the central sensory regions. Unilateral auditory hallucinations are comparatively frequent, and in a few cases cortical lesions of the opposite cortex were found on autopsy, without any other changes, so that the connection was undoubted. As a rule, however, the lesions cannot be sharply localized when there are extensive affections of the cortex or where several senses are implicated.

The question whether individual parts of mental opera-

tions are associated with definite parts of the cortex, has lately been agitated in another way. Reference has been made to mental focal symptoms; attention has been called to the fact that compound mental products, such as concepts and the power of language, are acquired singly and may also be lost singly. But the observations in this category are confined to a few clinical cases in which chiefly proper names and numbers were forgotten, or foreign languages were forgotten while the mother tongue was retained. Anatomical changes in layers were assumed, but proofs are wanting. It must also be remembered that we attribute no specific functions to the nervous elementary parts of the brain. Furthermore, all the higher mental activities are so complicated that we cannot assume that they are connected with simple elements. They are composed of numerous concepts in different sensory tracts. If a part is lost, it is not even necessary to remind ourselves that other parts of the brain may act vicariously, but there are so many concepts derived from other sensory tracts which have entered consciousness in the contents of the assumed complicated concept, that it is not permissible to speak of the loss of an individual component of consciousness. All internal processes constitute consciousness; there are no individual modes of consciousness. The processes of consciousness are dependent on the entire nervous system, not on the cerebral cortex alone.

Taken all in all, the attempts at localization of mental disturbances possess only a general value. Even the fact that memory is sometimes lost only in part, tells us nothing concerning a definite site of the loss in question. There is even some doubt as to whether, for example, the memory of a certain language or of music alone may be lost. Greater credibility attaches to the observation that the memory of proper nouns is lost more easily than that of common nouns and adjectives. But there are no circumscribed affections of the brain which teach us anything concerning the loss of such local memories. Mental diseases are not merely diseases of the brain but diseases of the person.

II.

CLASSIFICATION, IMPORTANCE, AND MODE OF ACTION OF THE CAUSES OF INSANITY.

THE causes of insanity are either direct and immediate, or indirect and predisposing. The latter favor the development of mental disturbances and produce a predisposition to them. In the individual case it is often difficult to decide whether we have to deal with a sign of the disease, *i.e.*, with an effect of these causes, or with one of the causes themselves. Statistics furnish a great aid in the study of the causes of insanity, but they must be interpreted with caution.

Different causes are so often combined in the same case that we are hardly ever justified in making a single one responsible for this or that effect. Hitherto all attempts at etiological classification of psychical diseases have failed on account of the numerous possibilities in each case, and also because an entire series of diseases would be left without a known cause.

The term psychical trauma has been applied recently to constantly repeated injurious influences which may produce a permanent morbid condition in certain parts of the nervous system. It is interesting in this respect that, apart from distinct mental disorders, some of the lower functions which are closely related to emotional and mental activities during health may also be morbidly changed in the same way. These are symptoms such as palpitation, insomnia, nervous digestive disorders, laughing and crying spells—conditions which are apt to develop after continued injurious psychical influences. That these conditions are not morbid *per se* is evident, because, like redness of the face in anger, pallor in fright, they are

perfectly natural results of their antecedents. But if they occur in uninterrupted succession the injured nervous system constantly reacts in this way, and its exhaustion is an evidence of the morbid condition. (Here we may properly speak of a psychical injury, a trauma, and the recognition of the casual connection shows the way of preventing further injury.) Among many illustrations of psychical trauma, we will mention only the following: The one-sided method of tormenting children with mechanical learning by rote results in early psychical exhaustion; the constant repetition of the same injurious stimuli rapidly leads to exhaustion of the cerebral activity, which either causes disease directly or predisposes to subsequent disease. In this way the effect of constantly recurring injurious influences assumes great power. We will now consider the predisposing causes according as they affect the community or the individual.

A. CAUSES ACTING UPON THE COMMUNITY.

Civilization.

The increasing frequency of insanity is an undoubted fact, and has often been explained by the advance of civilization. This is, however, only true in a measure.

It is calculated that, in civilized nations, there is, on the average, one insane individual to two hundred inhabitants, and this proportion is probably below the truth. As statistics refer, in general, only to recent times, I will make use of some older statistics which cover a small district and enable us to make a comparison between former and recent times. In Schleswig-Holstein, in the year 1803, there were 700 insane among 602,807 inhabitants, *i.e.*, 11 to 10,000. In 1840, there were 2,125 insane among 772,974 inhabitants, *i.e.*, about 28 to 10,000. In 1880, there were nearly 34 insane to 10,000 inhabitants.

The value of statistics, however, is impaired by several considerations. In the first place, the advance of civilization has prolonged the life of the insane, and thus caused

an apparent increase in their numbers. Furthermore, the increasing care with which statistics are obtained must be taken into consideration.

The chief disadvantages of our present civilization are clearly evident from the fact that the increase of mental disorders is coincident with the enormous increase in the population of large cities. We would need to describe city life in order to touch upon all the injurious factors which they exhibit. We need merely mention the bad hygienic surroundings, poverty, factory life, immorality, and the unmarried state. All these conditions are combined with the unceasing struggle for existence.

If we look at some other aspects of civilization which obtain not alone in the cities, it remains doubtful whether they exercise injurious effects, or whether some of them do not even prevent the development of insanity. Thus, it is questionable whether the religious and political convulsions of our times are etiological factors. Religious questions absorb the public interest less than in former periods. Political revolutions are attended by such complicated factors, that it is hardly possible to determine separately the real effect of the political condition. It is interesting in this regard that among the French, who exhibit no excessive tendency to mental disorders, political and social changes appear almost with a certain regularity. The influence of such events appears to be exerted mainly in the character and complexion of the disturbances, rather than in a notable increase. During the last Franco-Prussian war it was even maintained that many individuals, who were on the verge of insanity, were guarded against pronounced insanity by the mental excitement and occupation afforded by the troublous times. This question, however, is very complicated in character.

There is no doubt that the improvement in food, clothing, and dwellings, which goes hand in hand with advancing civilization, does not favor the development of mental diseases. The general advance in moral ideas also antagonizes the spread of insanity, so that it re-

mains doubtful whether civilization in general may be regarded as the cause of the increase in insanity.

Race and Nationality.

For a time it was believed that the Scotch Highlanders, the Irish, and the negro, exhibited less tendency to insanity, because certain forms, especially paralytic dementia, were not observed among them. This exceptional condition disappeared as soon as these people began to live in the large cities. In the United States the negroes are now attacked by general paresis, from which they remained exempt during slavery. Perhaps the Jews exhibit a comparatively greater predisposition to insanity, but this may be explained by another peculiarity apart from race, *viz.*, the fact that the Jews intermarry very often in close family circles; the crossing is insufficient, and heredity thus gives rise, by in-breeding, to a rapidly increasing predisposition. In general, however, statistics show no special tendency of any race to insanity, and this is also true of the different nationalities.

Geographical Position, Soil, Food.

The geographical position of a people is sometimes associated with mental diseases. A connection has always been assumed between the endemic occurrence of cretinism in some of the Alpine valleys and certain conditions of the soil. The excessive use of maize as an article of food by the peasants of Northern Italy gives rise to so-called pellagrous insanity.

Seasons and Climate.

The effect of these cosmical conditions cannot be ascertained with certainty. A few observations among agricultural populations appear to show that there are more admissions to lunatic asylums during the summer months, but this also appears to be true of cities. As a general thing, climate also exerts no influence.

Sex and Social Position.

In men the more efficient and dangerous factors are the struggle for existence, drunkenness, and excesses; women are more endangered by pregnancy and the puerperal condition, lactation, or unsatisfied sexual life. According to the law of crossed heredity, and, at the same time, the predominating influence of the father, insanity will be inherited somewhat more frequently by the female offspring. Inasmuch as periodical disorders, as a rule, are hereditary, the repeated number of admissions to asylums to which this very fact gives rise will in itself, apparently, increase still more the already more frequent affections of this kind in females. It is a striking fact that many very young girls are attacked by insanity. This must be attributed to faulty education, rather than to unsatisfied sexual desire, inasmuch as so many of the patients have hardly entered upon the period of puberty. In later years, the evil effects of celibacy are more pronounced in women than in men.

Age.

We cannot speak of insanity of the new-born, because in them the manifestations of mental life consist, at the most, of instinctive movements, but the germs of the disease are apt to develop at this early age. The brain of the new-born is very susceptible to irritation, despite its ability rapidly to overcome single injurious influences. This is shown by the marked rise of temperature following slight irritants, but which remain without permanent injury, if they act only temporarily. Nervous disturbances are, however, a frequent result of prolonged febrile conditions.

The consideration of the causes of insanity in childhood is very important. The division of the original instinctive life into conscious sensations and concepts, begins to develop during childhood. Volition and thought, apart

from sensory impressions, are not yet present. Hence, we speak of desires which grow from the sensual basis of feelings of pleasure and dislike. The personality, which is not yet completely defined, is passionate and instinctive, and unconscious egoism is a constant phenomenon. The manifestations of this process of development are subject to rapid changes and alternations.

Completely developed mental disorders are very rarely found in childhood. Their form is often so indefinite that they are regarded rather as evidences of naughtiness and bad manners. Among the poorer classes there is a decided predominance of idiocy, and this must be attributed to insufficient nourishment.

Great importance attaches to the influence of heredity in the mental disorders of childhood. Children, whose ancestors suffered from insanity or other nervous diseases, not alone become delirious from slight causes, such as digestive disturbances, slight fever, teething, but they are apt to be depressed for a long time after the ordinary disagreeable events of daily life. Mental work at school rapidly exhausts them; fright and punishment excite them in a dangerous degree. Many of these children also exhibit evidences of bodily degeneration.

Apart from hereditary influences the morbid predisposition not infrequently develops from injuries sustained during or after birth, such as compression in a generally contracted pelvis, violent forceps delivery, fall upon the head, etc. In some of these cases the physical development is delayed. Such children are especially apt to be spoiled by the parents.

In the later years of childhood, severe injuries to the head are often followed by imbecility. The heat of the sun, and frequent overheating of the head by hot stoves, act in the most injurious manner upon infants, and are regarded as the causes of early mental weakness, occasionally of temporary conditions of excitement. There is no doubt of the connection of ear diseases with mental disorders. Deaf-mutism is a sad illustration of this fact.

All catarrhs of the ear in children require the most careful treatment.

Unbiassed observers have failed to note cases in which insanity was due to the presence of worms.

Among the immediate psychical causes I will mention merely terror, fright, and worry, which lead occasionally to suicide. The importance of imitation will be considered later.

The next period at which a distinct change develops in the bodily and mental processes is the age of sexual development or puberty.

The addition of the powerful sexual impulse considerably enlarges the category of ideas at the age of puberty. It is a further important fact that at this period the hereditary predispositions become especially evident. Physiological development gives a new impetus to the inherited cells in the germ-layer, and thus the phenomena dependent thereon appear almost suddenly in full intensity. For this reason mental disorders are much more frequent at the period of puberty than during childhood, and they are more varied in character, in accordance with the larger experience of the individual at puberty. This period retains the instinctive manifestations of emotional life, and in addition there are vague sexual feelings whose end is indistinctly recognized, and lead to perverted interpretations and manifestations. Fantastic moods characterize the common basis from which mystical and sexual feelings arise. Violent outbreaks, sudden actions, without a real internal basis, arise in this stage of development of the vital processes. Rapid change of mood is very characteristic. Apathy of feeling, and the most superficial judgment of the dangerous results of the instinctive actions indicate the almost always rapidly developing mental weakness in the cases in which hereditary predisposition coincides with the development of puberty. We must hold fast to the great frequency of hereditary taint in mental diseases of puberty. For this reason they also exhibit the other signs of hereditary affections, *viz.*, rapid improve-

ment, frequent relapses, and persistence throughout almost the entire life. If hereditary taint is wanting, the purely affective forms of insanity, which are more favorable as regards permanent recovery, are more frequent than the other forms.

At this age we find comparatively many incendiaries who commit such actions either from uncomprehended internal motives, or from impulsive, but clearly defined feelings. Homesickness is another feeling which may increase to a morbid height. Other conceptions also force themselves upon the child, accompanied only occasionally by hallucinations. Peculiar disturbances of motion, which have an awkward and foolish character, must also be regarded as the results of the ill-defined feelings and impulses to which we have referred. Temporary muscular rigidity is sometimes present.

Certain of these conditions have been grouped under the term hebephrenia, but it is unnecessary to increase still further the numerous forms of insanity by giving them different names, according to the age at which they develop.

At this period, girls are exposed to greater risk of mental disorder than boys, but after sexual maturity is established the danger is less for a number of years, until they reach the age when the requirements of life bring new duties and injurious influences.

The period of greatest bodily and mental development shows the greatest frequency in the number of cases of insanity. The mental equilibrium is disturbed by external circumstances and influences, but the internal vital conditions, as such, are more innocuous. In old age, on the contrary, the internal processes do the most harm. The exhausting influences of mature life are the bodily and mental excesses, which are brought on by the stress of life's battles. Although the power of resistance is greatest, the harmful influences have grown to a disproportionate extent. Among these, alcoholism and syphilis need special mention. Dementia paralytica occurs chiefly at

this age, apparently as the result of the causes referred to, and independently of hereditary taint.

At the age of bodily and mental retrogression, more harm results from internal processes. Like the beginning of the sexual functions, so also its cessation produces profound changes in the entire personality. In women the beginning of this period (menopause) is more sharply defined than in men. Even in otherwise healthy women, striking mental changes are observed at this period, and there is often a fuller mental development.

The close relationship of olfactory hallucinations and sexual irritation is also manifested at this period. If malignant tumors develop in the breasts or ovaries during the menopause, coincident mental disturbances are very often accompanied by hallucinations of touch and smell.

The constant mental changes appear to belong among the first signs of the onset of the change of life; generally a depressed, but occasionally, a cheerful mood. Artificial removal of the ovaries may act in the same way as the menopause. Indeed, this is also observed after ovariotomies, total extirpations, or laparotomies in general. Perhaps such results are due to the action of the sympathetic nervous system. Certain symptoms of the menopause, such as hot flushes and other congestive phenomena, speak decidedly in favor of this connection.

In men the period of retrogression is much more prolonged. Growing old is the sign of involution of all the vital processes. The activity of the brain is impaired by the internal processes; the rigidity and calcification of the vessels play a part in this condition. A characteristic of the process of involution is the return of the instinctive desires and impulses, and this indicates the recurrence to the childish stage. The gradual decay of the nervous system takes place in a direction opposite to that in which it reached its highest development. Memory is the most marked illustration of this fact. The influence of hereditary predisposition is also noticeable during the period of involution. But when, despite the gradually increasing

weakness of the mental functions, the frequency of mental diseases diminishes with increasing age, it must be remembered that the number of predisposed individuals is diminished by the fact that many of them have been attacked by insanity at an earlier period, and that, as a rule, the cares and worries of life diminish in old age. Apart from rapidly increasing mental weakness, the symptoms of insanity in old age often are complicated by paralytic phenomena, which are due mainly to disease of the vessels.

Heredity.

In investigating the question of heredity, we must endeavor, if possible, to go back several generations. Apart from many other accidental causes, it must be remembered that a child is not alone the offspring of his parents, but is also the last link in a long chain of ancestors. It is impossible that all their peculiarities can be inherited by one individual. Certain members of a family escape the inheritance of various peculiarities, for definite diseases, such as, for example, hæmophilia, are propagated only in the male line, or they skip a generation. The connecting link in the chain of inheritance of insanity may also be formed by other nervous diseases or by allied conditions, such as striking peculiarities, criminal or suicidal tendencies. As the interpretation of such conditions varies with the personal view-point, it is clear that the statistics concerning the importance of heredity will vary greatly. According to cautious investigators thirty to forty per cent of cases of insanity exhibit evidences of hereditary taint.

Numerous experiences in psychiatry favor the notion that even acquired peculiarities may be communicated to the offspring. The probability of inheritance is very greatly increased, if both parents have an hereditary taint or suffer from insanity. The danger is much less when the predisposition is transmitted only on one side. It must also be remembered that acquired insanity in the

ancestors is only dangerous when children are born during the course of the mental disorder.

It is now regarded as certain, that the influence of the father in heredity is more important than that of the mother. Inasmuch as inheritance is usually crossed, we should expect that the female members of the family would be more endangered. This is not entirely confirmed by experience, because, according to several authorities, insanity of the mother is especially apt to be inherited by the daughters. Hereditary taint, when transmitted through several generations, gradually leads to degeneration. In the first generations we find, apart from nervous symptoms, the disappearance of ethical feelings; then follows a generation in which the tendency to excesses appears, and the danger is then greatly increased by alcoholism. In the third generation there is perhaps suicide or an affective form of insanity, and finally there appear more profound mental disorders, such as congenital idiocy. The last stage is often associated with various malformations and inhibitions of development.

As regards the form of mental disturbance, heredity acts in two ways, each of which is sharply defined, and only rarely do we find transitional forms. The more extensive group embraces symptom-complexes which are distinguished, not alone by variability as regards each one, but also by the fact that they are apt to pass into one another. This group has taught the multifarious relations of heredity; all the neuroses already mentioned and allied conditions, such as inebriety, criminal impulses, etc., lead to the most manifold symptoms as the result of heredity.

In the second group there is inheritance of the same form of mental disturbance as that presented by the ancestor, but this form is very much rarer than the preceding variety. The disease may appear in the children at the same age as it did in the parents, or under similar conditions—for example, when mother and daughter are attacked in childbed. The most striking phenomenon in this respect is the inheritance of the tendency to suicide. Cases

are reported in which one member of a family after another committed suicide, although they lived in remote parts of the world. Suicide on an hereditary basis is found even in children at the age of five years.

As we have already hinted, the variability of the symptoms in the individual case is characteristic of hereditary taint. Rapid changes of mood, frequent relapses, comparatively great mental ability, are found in addition to pronounced evidences of disease. On the other hand, there is sometimes a striking uniformity in the course of the individual attack of insanity in certain cases.

It was formerly supposed that relationship of the parents was sufficient to produce insanity in the offspring. This is disproved by more recent statistics and by historical illustrations—for example, the Ptolemys. Among them the king always married his sister, yet insanity was not pronounced in this family during a period of three hundred years. Nevertheless, it remains an interesting fact that deaf-mutism often occurs as the result of intermarriage of relations.

The condition of the parents at the moment of impregnation is also important. Children procreated during the drunkenness of otherwise healthy parents sometimes exhibit congenital mental and nervous disturbances. The significance of morbid cerebral activity at the moment of procreation is also shown by the fact that insane individuals produced healthy children during the intervals between attacks of insanity.

The assumption that heredity depends upon a definite condition of the germ-layers is favored by the observation that, in cases of hereditary taint, the outbreak of the disease very often occurs at the period of puberty. The general change in all the internal vital processes at this period makes it easily understood that such germ-layers should also be implicated.

Crime and Genius.

There is no doubt that a considerable number of crimes are committed by the insane, and it has been proven that the greatest criminals belong, as a rule, to families in which hereditary taint has been demonstrated. Furthermore, the offspring of such criminals are often attacked by insanity.

The Italian school has made extensive investigations in this direction. In addition to the proof that a number of criminals resemble savages (among other resemblances, tattooing is especially frequent among them), it has been shown that the born criminal resembles the insane or epileptic. Changes in the skull and brain and imperfect development of ethical feelings have been found. Other characteristics common to both groups are the frequent relapses, independent of good or bad treatment, good or bad external surroundings.

Genius has also been said, by some writers, to be connected with insanity. It is, indeed, an astonishing fact that many men of great talents belong to families with an hereditary taint, that many become insane, or have feeble-minded brothers and sisters or children. Finally, it has often been observed that a family unexpectedly dies out in the person of a great genius. All these phenomena are characteristic of hereditary conditions, but the question is not yet thoroughly settled.

Education.

One of the purposes of an ideal education is the removal, by means of the uniform development of all the functions of body and mind, of those dangers which may lead to insanity. The present neglect of physical education increases still further the efficiency of the errors in mental education. Errors in education are most dangerous when they coincide with hereditary predisposition. Excessive strictness as well as latitude may work equal mischief. The passions and desires of the children must be regulated

so that they do not forget the habit of self-control. A strain upon the memory as the result of learning by rote may produce precocious children, but they fail when subjected to the strain of actual life. Children in general attend school at too early a period, and are compelled to study too long and often under unfavorable hygienic conditions.

Occupation.

Brain-workers are more endangered than those who do manual labor. Among the former artists occupy the front rank as regards the danger of insanity. Even under ordinary circumstances, constant devotion to music is very wearing. Nervous conditions of all kinds, especially insomnia, are rapidly produced; irritability in family life is apt to davelop. Actors rank next to artists in this respect. The excitement of speculation is also injurious, and many merchants succumb to paralytic dementia. During a war, soldiers are also exposed to many causes of insanity—forced marches, exhausting diseases and wounds, and excitement of all kinds.

The causes of the frequent affection of prostitutes, sailors, and others in the lower walks of life, are complicated in character. They include drink, poverty, syphilis, and sexual excesses. Many prostitutes have an hereditary taint.

The absence of an occupation is also an efficient factor, as is illustrated by the frequency of insanity among tramps.

Insanity also occurs frequently among prisoners; prominent causes are remorse, and solitary confinement, which favors the sudden development of terrifying hallucinations.

B. CAUSES WHICH ACT ONLY ON THE INDIVIDUAL.

BODILY CAUSES.

The Brain and Its Membranes.

Almost all diseases influence the mood to a certain extent. We need merely mention the depression of gastric

and intestinal affections, the anxious conditions in circulatory disturbances, the peculiar cheerful and careless mood of some phthisical patients. The more directly such influences act upon the cerebral cortex, the more dangerous do they become.

Among the influences which exert a material influence on mental disorders is congestion of the cerebral cortex. This acts either by increasing the cerebral pressure, or by gradually changing the nutrition of the tissues.

Mental disturbance does not always follow congestion, because relief is long possible on account of the extensive vascular network of the cortex. If this does not occur, insomnia is the most common result; restlessness, irritability, and hallucinations are also frequent symptoms. Insolation is a cause of such congestion, and the latter also accompanies various cerebral and meningeal diseases. This is easily explained by the anatomical association of the blood-vessels of the meninges and cortex. The diffuse changes thus produced in the cerebral tissues are important, but similar symptom-complexes may also be produced by focal lesions, if they develop in the cortex and are attended with diffuse changes in their vicinity. A deficiency of blood or venous stasis, even if it develops suddenly from paralysis of the vasomotor nerves, diminishes the irritability. One of the most striking symptoms of cortical anæmia is drowsiness; this may terminate in stupor and unconsciousness, sometimes combined with convulsions, if the anæmia develops rapidly. Its slower development leads to impairment of memory and, indeed, of the mental functions in general. In most diseases of the brain and meninges, the change of symptoms is frequent, on account of the numeraus changes in the degree of fulness of the cerebral vessels.

Every form of meningitis may lead to mental disturbance. Hemorrhage, softening, multiple and general sclerosis, gliosis and tumors, if they give rise to diffuse changes in the vicinity, are generally followed by conditions of mental enfeeblement.

Cerebral concussion and injuries to the head give rise to inflammations of the skull and meninges, which may extend to the brain. In the brain itself they may cause disturbances of the cortical circulation, with secondary nutritive disturbances and psychical disease. The latter either follows the injury at once, or appears after a long interval. When cerebral concussion leads at once to disease, there are found, in addition to headache, vertigo and terrifying hallucinations, sensory and motor disturbances, such as narrowing of the pupils, gritting of the teeth, and paralyses. These symptoms generally subside quite rapidly, but indecision and enfeebled mental activity, with great irritability, persist for a longer time. In many cases the further course is very unfavorable, and permanent mental weakness sets in. The slowly developing cases also exhibit irritability and weakness from the start; epileptic convulsions, without any demonstrable local lesion, have also been observed. Such persons are easily exhausted, and this is also shown, for example, by the slight power of resistance to small doses of alcohol. Although it cannot be denied that the majority of mental disorders after injury are characterized by great irritability, indecision, and rapid mental enfeeblement, yet the term traumatic insanity is a generic term, which embraces the most varied causes and symptoms.

Coincident Diseases of the Cord, Nerves and Sympathetic.

There is sometimes a hardly noticeable transition in the occurrence of the symptoms when the causes develop at the same time in the brain and spinal cord. We need merely call to mind the diffuse and systematic scleroses of the cerebral nervous system, and especially tabes. The clinical symptoms of the latter are sometimes united so closely with those of paralytic dementia that they are inseparable. On the other hand, tabes may occur independently in connection with a mental disorder, so that their relation is not certain. But there are certain signs,

especially persecutory delirium with hallucinations, whose constant associated occurrence forces us to the conclusion that the tabes and psychosis have a common basis. Mental weakness often develops, especially at the close of the course of tabes. The recent interpretation of tabes as a disease of the entire cerebral nervous system, assumes a direct connection between the tissue changes in the brain and cord.

The medium of the vasomotor system becomes necessary in explanation of the mental disturbances in general neuroses, neuralgias, and injuries to the nerves. Mild disturbances, especially depression, are sometimes found in Basedow's disease. Insanity also accompanies chorea not infrequently. The symptoms are terror, loss of memory, and irritability. Epilepsy and hysteria are also often associated with insanity, but these affections will require special consideration.

The vasomotor element is still more distinct in certain neuralgias; the connection is especially distinct when the attacks of pain periodically precede the mental disturbance, or the latter follows pressure on painful points along the nerves. Temporary conditions of excitement have also occurred after operations of various kinds, during which sensitive nerves have been injured.

Affections of the cutaneous nerves may induce morbid mental symptoms. Even slight cutaneous eruptions give rise to irritability and bad temper, and in predisposed individuals they may cause an outbreak of insanity or color its symptomatology. Disease of the terminal ramifications of the nerves of special sense may also provoke hallucinations and mental disturbance, but as a rule hallucinations are central in origin.

Anæmia and Exhausting Diseases of Internal Organs.

The following causes act as remote causes of insanity, not alone by vasomotor or reflex influences, but also, as a rule, through the agency of a general, prolonged anæmia. These include pulmonary diseases of all kinds, but the

causal significance of tuberculosis is not very great. The importance of heart disease as a cause of insanity, in so far as the connection is explained by the general anæmia, is also greatly overestimated. In some cardiac affections there is passive congestion of the brain; in these there are apt to be conditions of anxious excitement, while depression predominates in general weakness of the circulation and anæmia. The reflex effects of palpitation and cardiac oppression also attend these diseases. All cardiac patients are irritable; in coincident insanity the peculiar restlessness is often manifested impulsively in violence. Aortic lesions, however, are usually an exception to this rule.

The development of imbecility after operative removal of the thyroid gland is a noticeable phenomenon; it is supposed to result from changed circulatory conditions in the brain.

Importance has always been attached to digestive disturbances as a cause of insanity. The abundant nerve plexuses of the abdomen are a source of reflex irritation. The possibility of the absorption of toxic substances, for example sulphuretted hydrogen, has also been kept in mind. Irregular distribution of blood, stases in the portal circulation, undoubtedly play a certain part. The chief importance, however, attaches to the impairment of general nutrition, but we must avoid mistaking cause and effect, inasmuch as digestive disturbances often result from the psychical disease. Psychoses due to intestinal worms are found, perhaps, only in children.

Psychical disturbances in the course of renal disease must be attributed to acute or chronic uræmia. In England, however, it is maintained that both diseases are due to vascular changes.

Diseases of the Sexual Organs and Disturbances of Their Function.

Some observers regard this cause as very frequent in females, others think it very unimportant, but all are agreed that diseases of the male sexual organs play a very

minor part. In women tissue changes and displacements of the uterus, with inflammatory conditions, are important. Although they do not often produce decided insanity, nervous disturbances are usually not wanting. Vaginal catarrhs, ulceration of the cervix, neoplasms, etc., act in this way. An erotic or hysterical character is often absent. The sterility due to genital affections often acts in a psychical manner. The disturbances of menstruation must be regarded both as cause and effect. Although it is doubtful whether they often produce insanity, they often influence the course of the mental diseases.

Sexual excesses may undoubtedly produce psychoses, but they are also often an indication of already existing disease. The principal injurious factor is the exhausting nervous action, and for this reason unnatural gratification of sexual desire is the most dangerous. In some cases masturbation results from peripheral irritation, such as oxyuri and cutaneous eruptions near the genitalia, but in the majority of cases the cause is cerebral. In these patients are often found, due to the same cerebral basis, olfactory hallucinations of a disagreeable character, such as the stench of fæces and corpses; these phenomena are associated not infrequently with a tendency to religious mysticism.

It is often maintained, particularly with regard to women, that continence produces a predisposition to mental disorders. This is not true of healthy individuals. A large number of women never have sexual intercourse and remain sane. Those in whom this cause is effective probably suffer from an hereditary taint.

The connection between pregnancy and insanity is brought about, in part, by circulatory disturbances. In addition, there are chemical changes in the constitution of the blood. It has been held, in opposition to this view, that the mental disturbance sometimes continues after delivery, but experience teaches that this is not true in many cases. In combination with other causes, for example, heredity, the frequent occurrence of psychoses during pregnancy is

easily understood. During the first months of pregnancy, in which the mechanical changes in the circulation can exert no noticeable effect, temporary psychical disturbances of a mild character may also occur. They are probably the result of a reflex nervous process. The fact that women who are illegitimately pregnant are attacked most frequently, is due to the numerous other harmful factors to which they are exposed.

The connection between childbed and insanity is more difficult of explanation. This fact is the more striking because certain symptoms are found quite constantly in the puerperal psychoses. They generally develop unexpectedly between the fifth and tenth days of childbed. In some cases an injurious influence may be exerted by the prolonged absorption of toxic substances, particularly when febrile movement has been present. Another very probable cause is the general anæmia which attends the loss of blood. In very rare cases conditions of violent excitement, lasting only a few hours, develop during the first few days after delivery, and these must be attributed to the sudden changes in the circulation and to high fever. Allied to these conditions is the quite rare occurrence of insanity after miscarriages.

The cases of insanity during lactation usually do not develop before the third month, and this indicates their connection with the general exhaustion and anæmia. Hereditary predisposition to mental disorders cannot always be excluded, and then the lactation is merely an exciting cause of the outbreak of insanity.

Febrile Diseases and Poisoning.

Formerly it was generally believed that febrile delirium appeared and disappeared with the febrile movement. It must, therefore, be regarded as a step in advance, when it was learned that the delirium and other mental disorders of febrile diseases may occur during the prodromal stage, prior to the rise of temperature. On the other hand, the mental disturbance may not develop until the fever has run its

course. Hence it follows that the fever is not the sole cause of such symptoms. Certain attacks of mental disturbance may develop during the course of intermittent fever, and take the place of the chill, although they run an apyrexial course. The majority of the diseases in question are infectious, and their organized germs must be considered in connection with the cause of the mental disturbances. This group includes typhoid and intermittent fever, cholera, the acute exanthemata, articular rheumatism, lyssa, and perhaps pneumonia. It may be assumed that the germs of these diseases produce changes in the blood, which impair the nutrition of the cerebral cortex. As the virus is circulating in the blood before the onset of fever, we are justified in assuming that this virus, not the febrile movement, may give rise to the mental disturbance. This also holds good with regard to the development of symptoms after the cessation of the fever. The virus may exert a chemical action, or it may give rise to local anatomical changes in the brain. In acute articular rheumatism localized inflammations and mechanical obstructions of the vessels are found in the meninges and the vessels of the cortex. In view of these facts, it is evident that febrile movement may not be regarded as the main cause of these psychoses, although it undoubtedly facilitates their outbreak. The increase in the bodily temperature acts as an irritant upon the nervous tissues, as is shown in cases of insolation. If the fever lasts a long time, anæmia of the cortex results from weakening of the heart's action; when the fever is of short duration, we may assume congestion of the brain.

We will now pass to the general consideration of the symptoms which develop after poisoning by various well-known drugs. There is an entire series of substances which are taken for the purpose of producing conditions like that of drunkenness, and whose continued ingestion leads to mental degeneration and disease. The extensive use of opium, hasheesh, and similar drugs for the production of intoxication is well known. Alcohol may be

placed on a par with opium as regards its disastrous effects. Its continued abuse gives rise to symptoms among which mental weakness and moral deterioration are especially prominent. Heredity also plays a great part in this vice, and the psychical disorder is then apt to be periodical. In such cases it is sometimes doubtful whether the abuse of alcohol is the cause or effect of the nervous predisposition. Some patients experience, from time to time, an uncontrollable desire to drink. The presence of the alcohol in the drink is not, however, absolutely indispensable, because these individuals, in asylums, sometimes drink only large amounts of water. The other causes which aid the poisonous action of alcohol can only be hinted at; the chief one is the mental struggle against the vice. The necessary degradation of the external surroundings finally leads to the overthrow of the mental and physical forces. The poorer the quality of the alcoholic drink, the more disastrous are its effects; whiskey which contains fusel oil and absinthe is much more dangerous than beer and good wine.

Among physicians it is especially the abuse of morphine, more rarely of cocaine, which may lead to the production of mental disorders. The physician's ability to take the poison unnoticed for a long time is a source of great danger.

We will merely mention the names of an entire series of substances which act in a similar manner. Among these are salicylic acid, iodoform, and ergot. After the ingestion of the latter epidemics of psychical disturbance have been observed. Spoiled maize has given rise to widespread, so-called pellagrous insanity. Psychoses have also been observed after the excessive use of tobacco, also after prolonged abuse of chloroform and chloral. More common are the injurious results of poisoning by certain metals, especially lead and mercury. They occur not very rarely in painters and miners in lead works, either as temporary conditions of violent excitement, or as prolonged affections, in which disturbances of speech and

other paralyses indicate pronounced disease of the cerebral cortex. Workers in mercury also exhibit symptoms which indicate an action upon the cortex. The bromide salts may give rise to serious motor symptoms, with mental enfeeblement, but this usually disappears soon after the discontinuance of the remedy. Gases may act in a somewhat similar manner. Carbonic oxide produces congestion of the brain, and sometimes even softening of the cortex. Psychical disorders have also been reported, in a few cases, after inhalation of carbon bisulphide and also illuminating gas and sulphuretted hydrogen.

PSYCHICAL CAUSES.

The views concerning the extent of efficiency of the psychical causes of insanity vary greatly, but I am inclined to believe that they are among its most frequent and fruitful sources, both in preparing the soil and particularly in acting as the immediate causes of the disease. One cause, which acts as a constantly repeated injury, is the grief due to the loss of near relatives. The effects of psychical pain are so much more marked when it is kept hidden from view. The internal wounds, which are concealed externally by smiles, act slowly, but surely. Morbid general sensations increase the emotional excitement; insomnia, in particular, prevents the restoration of new force to carry on the struggle in the soul. There is no doubt that, in numberless cases, repressed or immoderate grief is the source from which all the manifestations of insanity flow. A similar effect is produced by business worries. Their action is slowly progressive; slight cares and troubles usually mark the onset, nor do they need to increase during the further course of the affection, inasmuch as the power of resistance diminishes under the repeated blows. Constantly gnawing fears, without actual material losses, may lead to the mental breakdown. We always find two factors in these causes, *viz.*, the repeated and constant occurrence, and the painful element of feeling. Both together prevent the inhibi-

tory counter-effects of other ideas. Hence, we must look upon continued painful feelings as the most important psychical causes of insanity. Joyful feelings never, perhaps, give rise to insanity, especially because, as a rule, they only act temporarily and the equilibrium is rapidly restored.

The form of the disease sometimes agrees with the determining cause, inasmuch as fear and despair etc., may lead to similar notions during the psychosis. More frequently, however, the mental disturbance pursues an independent development, irrespective of the causal feeling.

The direct action of these causes is rarely immediate in point of time, as a long-continued internal psychological preparation is usually necessary. Irritative and paralytic conditions of the vasomotor system are constantly noticed; but it does not explain very much to say that such conditions give rise to the final symptoms.

Violent grief over the loss of a loved one is dissolved into distress which lasts so much longer the greater the gap that has been left in our lives. If no restorative comes to the exhausted brain, torturing thoughts stream rapidly into the field of consciousness, until associated ideas well up irregularly from the depths of unconscious cerebral life, and make all order impossible. Hence the resemblance of immoderate emotions to maniacal excitement, and also the tendency of many insane to unbridled emotions. The emotional movement wells up irregularly from the flood of cerebral activity, and volition can no longer keep it in the proper connection of psycho-physical action. Volitional thought yields to the power of external actions, and the emotional excitement becomes a permanent morbid disturbance.

Mental overwork, such as, for example, is due to ambition, also constitutes a psychical cause of insanity. Disagreeable feelings here accompany failure, and disappointed ambition is accompanied by inhibited self-esteem. Repeated failures and unavailing efforts to maintain an unduly exalted position increase these harmful influences.

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Unbounded ambition may lead to mental disorder, but it may also be an evidence of its actual existence.

One-sided devotion to a few branches of knowledge also acts injuriously. Exhaustion is here recognized by the feeling of strain while thinking, and failure of the association of ideas; these intellectual feelings find a place in consciousness, in which only loose connections bind them to the bodily functions, and the connection with the latter is only established by the introduction of bodily disturbances. But we are so much the more forced to regard these causes of psychical disorder as direct and immediate, because the efficient factor is the internal process which runs its course in consciousness.

I will briefly refer to two other undoubted direct causes of insanity. Unrequited love causes disappointment, grief, and a variety of violent feelings, which may exert a profound influence on consciousness, but experience teaches that this hardly ever produces permanent mental disturbance, except upon an hereditary basis. We may also refer to the effects of religious sentimentality upon the production of insanity, merely to warn against an exaggerated idea of its importance.

The occasional occurrence of psychical epidemics due to religious causes requires a few words of comment. The fact that morbid conceptions may be conveyed to others has been observed in those who lead secluded lives, and also among large masses of men. This has been compared to the process of suggestion during hypnosis, and the phenomena in question have been explained by a sort of waking suggestion. A restriction of consciousness to a few categories of ideas prevents the will from rationally directing the course of such ideas. With the increasing weakness of volitional activity, the combinations of thoughts which arise from internal and external impressions assume the upper hand, and produce the mental disturbance.

III.

THE SIGNS OF MENTAL DISORDERS.

Introduction.

THE general doctrine of the signs of mental diseases concerns itself with the elementary phenomena, which compose the most complex clinical pictures. It considers, from a general standpoint, the individual elementary disorders which are variously grouped in the special forms of disease. In order to avoid all metaphysical speculations, we will call the soul the logical subject, to which all the individual data of internal experience and observation are applied as predicates. We will regard consciousness as a fact of experience of the individual, which cannot be made clearer by further definition. There is an essential difference between internal and external experience, between the perception of conditions of the ego and of changes in the external world. The psychical processes in the individual belong entirely to his inner experience, and can only be observed by others by means of definite changes in speech, gestures, and actions. Hence, the phenomena of healthy and morbid mental life must be recognized by the aid of psychology and anatomy.

All internal experience possesses for us direct reality, while the objects of external experience are only recognized indirectly. If they are to become objects of conception and thought, they must pass in some way into internal experience. Concepts, feelings and volitions constitute the contents of our internal experience, but they are so complex that it becomes the object of psychology to resolve them into their simplest elements. The real element of all mental activities is the impulse, that activity in which sensation and will become efficient in their pri-

mary combination. The mental development of every individual introduces herein the process of apperception, *i.e.*, the grasping of external and internal impressions by means of attention. It is only with the independence of this process that a higher mental development follows, with which all higher feelings and volitions are associated. As these concepts are only grasped singly, their grouping under general notions would not aid us much in their comprehension, but they are so complicated that, for clinical purposes, they must be divided into certain groups.

The first group of mental changes which we will consider includes:

A. THE DISTURBANCES OF CONSCIOUSNESS.

1. *Disturbances of the Perceptive Process.*

The reception of sensory impressions may be disturbed in their passage through the nerves of sense. This perception is often falsified at the terminal distributions of these nerves. Diseases of the eye, catarrhs of the middle ear, irritative conditions of the nasal mucous membrane and the buccal cavity, inflammations of the skin and mucous membranes, and morbid changes in the viscera and muscles, may play a part.

Special attention must be devoted to the eye. For the present, we will examine only the phenomena which take place in the terminal distribution of the optic nerve. This category includes certain light phenomena which develop in the retina—the so-called light dust of the internal field of vision, also obscurations and color phenomena. Their development is aided by processes in the retinal vessels, especially by the implication of the blood corpuscles. The pulsation of the central artery of the retina also produces hallucinations. A material influence upon these phenomena is exerted by the pupillary region, because this is the apparent view-point for the subjective observer, but processes in the macula exert the chief in-

fluence in the production of many visual hallucinations. The action of the ocular muscles and nerves possesses less importance.

A common feature of all the shapes arising from the retinal light proper is their enlargement, often to an enormous extent. This is probably explained by the nearness of the object seen, especially when the latter is situated in the eye, and the refracting action of its parts is wanting. These hallucinations appear mainly as lights or obscurations in the shape of disks, corresponding to the shape of the yellow patch. When these discs of light or darkness burst forth, as it were, from the macula, they form fruitful material for morbid manipulation in the concepts of the brain. The healthy individual overlooks such processes, especially as they do not develop so violently, or he recognizes the mode of development and is not alarmed thereby. It is only when there is impairment and restriction of consciousness that the efficiency of elementary sensory deceptions is favored; hence these so-called peripheral hallucinations are found chiefly in such conditions. In this relation flames and lightning are terrifying phenomena. Fiery points, stars, and rays, such as appear after injury to the eye, also on coughing, sneezing, or bending over, as a rule, are observed only temporarily. But if they are prolonged, as in fever, they form the material for morbid manipulation in the concepts. Local congestions of the retinal vessels, and the toxic action of morbid chemical constituents of the blood upon the retinal termination of the optic nerves, produce peripheral hallucinations in fever, and especially in alcoholic intoxication. In the delirium of alcoholism, dark or shining appearances develop in great number and rapidity. We must assume conditions of irritation or paralysis in the macula lutea, which is affected by variations in the fulness of the vessels. The coincident impairment of consciousness does not permit any explanation of these sensory impressions which are conveyed to the brain, and they are interpreted as crawling insects, rats, mice, pigs, cows, etc. The phe-

nomenon sometimes has a special color because, after looking for a long time at colored objects, the tired retina sees the complementary colors. The sky often furnishes the opportunity for the production of this phenomenon.

In addition to the blood-corpuscles moving in the vessels in front of the retina, the angular pigment epithelium and the roundish granule cells also furnish material for different shapes. If the sensory deception develops in one eye alone, the possibility of distinguishing it from a unilateral hallucination, which has developed centrally, is to be sought in the fact that the central development gives rise to much more complicated phenomena. We then find frequently that there are also hallucinations of other senses, and these are combined more readily with other concepts. Moreover, peripheral hallucinations are more pronounced in the dark, and when the eyes are closed, than in a bright light.

At all events, the entoptically visible masses of the retina must be regarded as the source of numerous retinal phantasms; as the products of nerve substance they differ from the effects of the external world, but are influenced by the latter in certain respects. The movements of the ocular muscles and the retinal pulsations are manifested by apparent movements of the retinal phantasms. It has been ascertained in some cases that visual hallucinations appear to grow larger on nearer approach, and this must be explained by the influence of accommodation. The combination of light and dark objects in the entoptic field of vision, with the movements which are superadded by the ocular muscles or retinal pulsations, suffice, when consciousness is morbidly restricted, to produce the notion of various running animals or shapes. As this variety of hallucinations depends upon the presence of entoptic masses, we can understand the great variations in their frequency and extent, in otherwise similar morbid conditions of the brain. Under physiological conditions, the frequency of entoptic shapes varies greatly, so that we may expect this form of hallucinations only in those patients who have already

experienced these peripheral processes during periods of health.

The condition of the optic nerve in its path to the brain furnishes an important amplification of the mode of development of hallucinations. Division of the nerve has been known to abolish previously existing hallucinations, but, on the other hand, there is a series of cases in which hallucinations existed despite complete atrophy of the nerve. Hence the site of development must have been situated centrally. Pathological data force us to the conclusion that such hallucinations develop in the cerebral cortex, probably only in the occipital and parietal lobes. In dementia paralytica in which the anatomical changes are confined commonly to the frontal lobes, hallucinations are very rare; these changes have also been found in the posterior parts of the brain when the patients exhibited distinct hallucinations during life.

Peculiar interest attaches to the unilateral appearance of a half body, for example, half a face or a part of a card, associated with a loss in the field of vision, attributable to an interruption of conduction in the corresponding optic nerve. This could only be understood on the assumption that the material for the hallucination was collected by the intact optic nerve fibres, and hence the memory images were also halved.

Although it is very difficult, in individual cases, to prove the peripheral or central origin of an hallucination, this differentiation is very important. It must be remembered, however, that both forms may occur together. The theory that hallucinations only develop peripherally assumes that the retina possesses a sort of memory, but very little proof is offered in favor of this view. The manifold character and the complicated combinations of visual hallucinations, derived from the entire experience of the individual, cannot possibly be attributed to a peripheral retinal memory.

That memories of our entire range of experience develop in the cortex, is one of the most assured observations of

each individual, and between these memories and hallucinations there is a difference only in degree. It is unjustifiable, however, to attribute all hallucinations to central causes. The vividness of some hallucinations appears to be explained insufficiently by a condition of irritation which is confined to the cortex, and hence it was inferred that a centrifugal stimulus passed from the cortex to the terminal distribution of the optic nerve. It was claimed, in support of this mode of conduction, that the phenomena sometimes change their location in space on moving the eye; also that after-images may follow hallucinations which have run their course, for example, when they had developed on falling asleep. But if we adhere to the view that some hallucinations develop peripherally, both of the cases here mentioned can be easily explained.

Nor does the vividness of other central phenomena require the assumption of a centrifugal conduction of the irritation. This will be understood on studying the primal property of nervous substance in general, and which we call memory in the broadest sense of the word. All visible objects may leave more or less permanent impressions on the brain, and remain as memory-pictures in our memory. They may regain their actual distinctness, partly by directing the attention upon them or by repetition of the same impressions from without. This process is known to every healthy individual. I think of a friend, and at once his image stands before me. This faculty varies greatly in different individuals. For example, some painters can paint a portrait from memory. The only material difference between the memory-picture and the actual sensation consists, perhaps, in the fact that the former is associated with the idea that the object is not really present. Between such memory-pictures and central hallucinations there is only a difference in degree, the process is always the recalling of the memory-picture.

It is a striking fact, however, that, as a general thing, only a few, constantly recurring memories form the contents of hallucinations. A patient constantly sees a skull

upon a chair, another sees a black object. This is not so astonishing, however, if we bear in mind the property of nervous tissues to recall readily past experiences.

The special causes of irritation of the cortex will be discussed in other places. Here it may be remarked that the absence of judgment and of revision by other regulated conceptions gives rise to fleeting and unconnected images even in dreams. When the attention is disturbed, as in insanity, the memory-pictures of the irritated cortex may also appear in the waking condition.

Perhaps there is an alternate action between the perception-brain and the place which we assume as that of volitional interpretation of the internal mental processes, *viz.*, the apperception organ in the frontal lobes, in which the predominant activity of one part produces morbid phenomena. It is most disastrous for the psychical activity when, with stimulation of the central sensory surfaces and impaired consciousness, the connection of ideas and memory-pictures takes place rapidly and independently of the will. This is the case in the insane. In this condition the power of the hallucinations is very great, and it is true, in a certain sense, that the patient not alone thinks he has visual hallucinations, but that he really sees the shapes. They may be perceived alongside of unchanged, really perceived external objects. The overpowering convincing effect of the hallucinations often leads the patient to perform the most senseless acts.

All the forms of hallucination hitherto mentioned are thus really produced by processes in the inner life of man, or, strictly speaking, in his central nervous system. These are grouped together under the term visual hallucinations, and are distinguished from phantasms whose distinguishing feature it is that they are produced by external objects; this includes all objects situated in front of the retina and also the corresponding parts of the eye itself. To these the term illusion is applied. A normal consciousness easily recognizes all illusions as deceptions, and corrects them by the aid of the other senses and quiet

reflection. The excited or irrational patient often interprets external objects falsely. Opacities of the vitreous and cornea may cause illusions, and in fact all processes which give rise to entoptic shadows on the retina. There are cases of unilateral visual illusion which disappeared after iridectomy or extraction of the lens, or even after closing the lids.

The whole of visible nature may be the field of these illusions; they develop only when the eye sees an object and hence are always a product of the present. Previous impressions are often necessary to the development of hallucinations. In retinal blindness there may be hallucinations but no visual illusions. In the darkness of night and twilight, the excited fancy is most apt to adopt false interpretations of ill-defined visual impressions.

Finally, in broad daylight the patient sees things in shapes which are different from the reality, and then there is a gradual transition between illusions based on a false interpretation of objects, and purely imaginary concepts or delusions. Thus, Don Quixote saw giants' arms instead of the vanes of the windmills. Here the mode of development of illusions may approach very closely to that of hallucinations proper, because impressions acting from without are often no longer present. Illusions depend upon error of recognition, upon a false interpretation of external objects. Illusions do not exclude hallucinations. They may occur at the same time in one individual, and it is then not always easy to distinguish them. Such a combination is probably of common occurrence, and the reference of hallucinations proper to the external world is so much easier when they are favored by illusions within and in front of the eye.

But that hallucinations, like ordinary memory-pictures, are *per se* referred to the outside world, is evident from the fact that such memory-pictures are always seen in front of us, even when the eyes are closed; on the other hand, it is very difficult to transfer the memory-picture behind one's back.

We will now study the development and location of auditory hallucinations. This is extremely important, because it touches upon the domain of speech, which distinguishes man from the animals and forms the ways and means for all higher mental development. Internal hearing is much more vivid than internal vision. It is the habit of man to think in word-images. The majority accompany their thoughts with the special form of language-images or writing-images, others with speech-images, *i.e.*, there is in them a stimulation of the speech muscles by the brain. Ideas are more rarely associated with writing movements. We may, therefore, conclude that internal hearing is associated with internal speaking. Hence, when irritative conditions develop in the cortical auditory centres, the greatly intensified sound-images and word-images are not alone referred to the outer world, but they also reach the highest degree of distinctness, because a stimulus also passes to the muscles of speech. Internal speech is a process which exhibits the most different degrees of vividness and thus indicates the transition between healthy and morbid mental activity. As a matter of course, it does not accompany every central irritative process, but when it does the auditory hallucinations possess overpowering force. They are much more extensive than visual hallucinations, and this must be attributed to the frequent combination with speech-images. This association of word and idea is so firm that in the majority of people every thought produces a sensation in those muscles of speech which would be employed in actual articulation. These slight impressions of movement are sufficiently strong to act recurrently as sensations of movement. This is proven by the statement of many who suffer from auditory hallucinations that it seems to them as if their thoughts are spoken or repeated internally, as if communications are made to them through the agency of their thoughts. Thinking double is merely another term for the same process of associated movements in the speech muscles. The state-

ment is also made that the words are spoken in advance, before they have been uttered by the patient, as if they have been pressed into his brain. If the judgment is impaired, these words, which are first understood internally, are referred to the outer world, and then the notion follows that the words have a real external origin.

This does not exhaust the central origin of auditory hallucinations. The memory-pictures of the voice of certain persons are easily aroused; we can readily recall, in memory, the timbre of the voices of members of our family. Such concepts are also at the command of the insane and are rapidly associated with other memory-pictures. The patient hears the voices of those about him expressing his own thoughts. In explanation of this process the patients call these hallucinations internal voices, which are conveyed by the telephone or telegraph, recently by the phonograph. The more impaired the patient's consciousness, and the more ignorant he is, the more readily does he adopt such an explanation. The loudness of these voices varies from the gentle internal speech of the healthy man to the most vivid distinctness, in which the patient really hears as distinctly as if the words were spoken; indeed, the deception may be so pronounced that the words drown an actual conversation. There are also cases in which the deception does not seem to extend beyond the patient's body and is not referred to the outer world; they speak of thought-speech, and hear, not the voices of deceased individuals, but their thoughts in their own soul. Or the voices cause a gentle noise, which is referred to some part of their own body; in these cases it is probable that the reference of the voices to any part of the body is due to a morbid sensation in that part.

It is a peculiar expression of patients with auditory hallucinations that others read their thoughts; the peculiar character of their own speech muscle movements seems to be described in this way. In a few cases the patients themselves have noted these movements of the organ of speech. We are not justified in claiming that pure inter-

nal audition precedes internal speech, *i.e.*, the associated movements of the speech-muscles, but the association of both processes varies according to the peculiarity of the affected individual. Whoever is in the habit, as a healthy individual, of thinking more in writing-concepts than in speech-concepts, associates the auditory hallucination with a writing-image, and this probably accounts for the rare cases in which the hallucinated word is seen upon the wall, the table, etc.

That the point of irritation in the brain possesses material importance is shown by the fact that unilateral auditory hallucinations have been observed after focal lesions on the opposite side of the brain.

We must now determine to what extent true hallucinations may develop in the course of the auditory nerve and its terminal distribution. Anatomically it must be noted that, unlike the retina, the terminal distribution of the auditory nerve (Corti's organ) is not developed from a part of the brain. Hence, there is no reason at all for assuming a peripheral memory, and we can only conjecture that perhaps diseases of Corti's organ may be direct causes of auditory hallucinations.

Deaf people may experience auditory hallucinations, in a manner analogous to the visual hallucinations in atrophy of the optic nerve. We may here refer likewise to the ability of great musicians to compose symphonies, despite complete deafness, and this presupposes almost actual distinctness of sound-concepts.

There are numerous causes of auditory phantasms outside of the auditory nerve, and these must be included among illusions. Our attention is first attracted by so-called entotic noises; the part which is here played by independent irritative conditions of the termination of the auditory nerve cannot be estimated, and such conditions must be examined in connection with those causes which appear in the immediate vicinity. In the ear itself we find inflammations of the drum membrane and cavity, and all those conditions which increase the pressure of the fluid

in the labyrinth. Hence, chronic catarrh is the most frequent cause of noises in the ear. Congestion and inflammation of the semicircular canals act in the same way. Loud and persistent noises arise from pulsating vessels, such as the internal carotid; or roaring noises develop, especially in general anæmia, in the bulbus of the internal jugular vein beneath the floor of the middle ear. All these sounds may become the material of illusions when consciousness is disturbed, but the healthy individual usually secures the proper interpretation. The latter, however, often refers the whistling, etc., to the external world until experience teaches him that the noise is located in his own head. Other bodily sounds, such as the movements of air and gases in the bowels, râles in the lungs, and heart sounds may also constitute the material for illusions.

All real sounds of the outer world may also be falsely interpreted into illusions, and here the close relationship is shown between auditory illusions and delusions.

As a matter of course, hallucinations and illusions of hearing may exist together. Many of these patients stop their ears. This is perhaps explained by the assumption that illusions due to the ill-defined noises of every-day life (rattling of wagons, etc.) are thus prevented, but the attempt will be partly useless and only explicable in view of the undoubted attempt to prevent hallucinations which are referred to the outer world.

Hallucinations and illusions of smell cannot be distinguished separately except in those very different cases in which they are produced in the central olfactory cortex or in which they are due to the interpretation of causes situated outside of the body. The boundary between the terminal distribution of the olfactory nerves and the adjacent mucous membrane does not allow us to decide practically between peripherally developed hallucinations and illusions based on processes within the body. Although we may regard peripheral olfactory hallucinations as possible, they are the same, for our purposes, as illusions. Nasal

catarrhs, congestion and proliferations of the mucous membrane, and all other pathological changes in the nose are among the causes of illusions. Smells which actually develop in any part of the body, such as the smell of decomposing epithelium of the tongue, may give rise to the notion of decomposition or poisoning. The possibility of the misinterpretation of all smells in the external world into illusions is also easily understood.

Disagreeable olfactory hallucinations have also been observed in progressive destruction of the olfactory nerves by tumors, so long as an irritative condition of the nerve persisted. Very few cases of true hallucinations have been observed after entire destruction of the nerves. A noticeable phenomenon is the loss of smell, lasting hours or days, in persons suffering from increased cerebral pressure. This must be attributed to variations in pressure, and perhaps this cause partly explains the periodical occurrence of olfactory hallucinations. This may also be true of the other nerves of special sense.

Concerning the olfactory hallucinations which develop in the central olfactory area, not much can be said, because its location in the cortex is not positively known. It is a very striking clinical fact that olfactory hallucinations are often associated with morbid sexual phenomena.

The development and situation of gustatory hallucinations are very similar to those of smell. They are also very rare, but not devoid of importance, as they sometimes lead to refusal to take food. The difference between hallucinations and illusions becomes indistinct at the boundary between central and peripheral parts. Very often the possibility of direct effects of processes in the mucous membranes cannot be excluded in the "contact" senses of smell and taste. For example, the chemical action of decompositions in the buccal cavity undoubtedly plays a frequent part. The possibility of a purely central development is shown by the fact that gustatory hallucinations are often combined with those of smell, hearing, and sight.

Great practical importance attaches to hallucinations of

feeling. The main difficulty in examination is found at the boundary line between hallucinations and illusions. The wide distribution of the terminal nerves in the integument, mucous membranes, and internal organs leads to a further difficulty. In almost all cases only small parts of the entire sense of feeling are to be examined. We must determine whether these belong to definite peripheral nerve tracts or to tracts whose nerves unite only in the centres. In the latter event the deception of feeling probably is produced in the brain, *i.e.*, it is an hallucination, in the former event it may also be an illusion. In the skin the proof of such connection is not often possible, it is easier in the mucous membranes and internal organs. The demonstration that hallucinations develop peripherally in the skin is not practicable, because we are not accustomed to refer cutaneous sensations to any other parts. On account of this peculiarity cutaneous sensibility, as a contact sense, is closely related to smell and taste. In the main it is mechanical impressions, and also differences in degrees of heat, which give rise to illusions of the sense of feeling.

A proof of the view that deceptions of feeling are commonly illusions is found in the fact that, as a rule, the patients merely compare their sensations with similar processes. But after the illusion has lasted a long time, its original cause disappears in the patient's mind and may pass into his memory, whence it may appear later as an independent hallucination. This is also true of the other senses. The well-known notion of the presence of an amputated limb affords an illustration of an hallucination which has become central, after the original irritative phenomena in the cicatrix of the nerves have disappeared. This process is a complicated one, however, on account of the implication of the muscular sense. Indeed, this can often not be separated from cutaneous sensibility in considering deceptions of feeling. When, for example, unusual positions of the limbs give rise to illusions in diseases attended with cutaneous insensibility, this is due to the peripheral terminations of the nerves in the muscles.

The central origin of muscular sense may also give rise to hallucinations, as is shown by the remarkable feeling as if the patient were flying.

The combination of correctly interpreted perceptions with misinterpretation of other impressions is found most frequently in ideas concerning the condition of the viscera. This is particularly true of the hypochondriac. Deceptions concerning the condition of the genitalia are very important in this regard; also the disturbance known as imperfect feeling of satiety which is often due to gastric affections. All other viscera whether healthy or diseased may also cause changes of common sensibility and thus lead to deceptions. This common sensibility undoubtedly has a central origin, as is shown particularly by the occurrence of numerous associated sensations which depend on irritative conditions of the most varied nerves. Pain is the most important disturbance of common sensibility, and is very significant in the development of hallucinations. But if diseases of the nerve-fibres themselves are converted into delusions, we see that falsely interpreted sensations are not always true sense-deceptions, and that the difference between these two forms of disturbance of the perceptive process must be maintained.

Hallucinations in general are connected with the contents of consciousness at the time, and this is shown most clearly when the thoughts are expressed aloud. As auditory hallucinations occur chiefly in chronic disorders they form the most frequent variety; and their connection with thoughts entertained at the time is very common and is expressed in speech. The patient calls these processes "voices," although numerous other noises are also heard. The auditory hallucinations are usually of a disagreeable, distressing character. Reproaches, insults, and ironical remarks, generally in short sentences, excite the patient and lead him to commit violence against his supposed revilers and persecutors. Their threats impel him to flee; their commands lead to senseless and unnatural acts, especially when they are ascribed

to higher powers. The pitch and timbre of the voices are often distinguished, and are then ascribed to different persons. They speak in a whispering or hissing tone, from a distance, from above or from the floor; at other times, they are so loud that all other sounds are drowned. More rarely the patients hear loud noises, music, or singing; in the rarest cases do they have an agreeable character. The patients hear hammering, ringing of bells, or the driving of nails into a coffin. They are usually associated with visual hallucinations, in the shape of supernatural beings. God or Christ appears to the patient, promises him future greatness, directs him as to the manner in which to obtain his rights. As the auditory hallucinations return to the circle of ideas from which they have usually developed, they form a constant stimulus for the same delusions.

In a fewer number of cases the voices are entirely foreign to the patient's ideas and thus excite still greater terror.

The contents of visual hallucinations are not always so unpleasant. As they occur most frequently in acute affections, they are cheerful or depressed, according to the character of the psychical disorder. The usually peripheral hallucinations of the alcoholic consist of mice, rats, birds, insects, whose rapid movements often provoke the patient's mirth, but sometimes terrify him. Other peripherally developing light-phenomena are masses of fire or light; the patient imagines himself in heaven, and sees the glory of God, or believes he is surrounded by the flames of hell. The more impaired consciousness is, the more terrible do the contents of such visual hallucinations become, and these conditions of terror are sometimes of frightful violence—for example, in epileptics.

However, not all statements of the patient concerning visual hallucinations may be accepted unreservedly. They are often merely dreams which are regarded as real, or the patient has a tendency, when leading questions in this direction are asked, to boast of fleeting ideas as distinct sense-perceptions.

Olfactory hallucinations are usually disagreeable in character. The smell of a cadaver or of sulphur is often mentioned; the delusion of poisoning and refusal to take food often accompany such hallucinations. The majority of gustatory hallucinations are also disagreeable and are generally attributed to mixtures with food. In a few cases the hallucinations are pleasant.

Hallucinations of feeling are very numerous and varying. They are more frequently pleasant than hallucinations of other senses, yet the disagreeable ones predominate. This is especially true at the onset, when they are generally foreign to the contents of the patient's ideas. With increasing mental weakness their disagreeable nature disappears. We must not regard as real all the strange judgments which patients affirm concerning their true, but falsely interpreted sensations. The patient employs peculiar expressions to express his sensations. Pinching, pricking, burning, tearing, which indicate a peripheral origin, are frequently employed. These are often combined with statements that the patients are being magnetized—evidently an attempt to explain the sensations. Their contents also depend greatly on the feelings which arise from the condition of the viscera.

Hallucinations of several senses are very commonly associated with one another. This is particularly true of the contact senses, especially smell and taste. Auditory hallucinations are often observed alone; visual hallucinations are hardly ever independent of hallucinations of hearing or feeling.

The strength of hallucinations varies during the disease, being less at the beginning and end; they rarely cease suddenly. When recovery begins, the visual hallucinations usually become less vivid, the outlines become vague, auditory hallucinations become remote and indistinct. At this time the patient's attention may be drawn to the morbid character of his condition in order to hasten recovery. But even then caution is necessary, because attention should not again be called to the disap-

pearing conditions. It is entirely wrong, however, to attempt, at the height of the disease, to reason the patient out of his hallucinations. This is usually harmful because the patient's mistrust is excited or increased.

Hallucinations occur not alone in mental disturbances, so that they must be associated with a change in the entire personality before they justify the diagnosis of insanity.

2. *The Disturbances of Consciousness during Sleep and Dreams. Associated States of Impaired Consciousness and Hypnotic Conditions.*

Sleep is related so closely to mental activities and disturbances that it becomes necessary to investigate its cause. As a rule, two causes co-operate in its production, *viz.*, the exhaustion of the central nervous system and the diminution of attention. Sleep is associated with the activity of the apperception organ; inhibitory effects upon the movements of the heart, respiration, etc., are produced; during their influence the psychophysical side of mental life rests and recuperates. An increase or diminution of the regular periodical function of the brain, which appears in the shape of sleep, may be one of the most striking signs of mental disturbance.

The most important is insomnia, because it is not alone a sign but a cause of the development of the psychical disorder. Restless sleep may also occur constantly in a healthy individual, but when it is a new sign it acquires greater importance.

Somnambulism is a more important symptom. As a rule during sleep, more rarely in the daytime after hysterical or epileptic seizures, the patients walk about, perform various acts, even commit crimes, and then lie down, without having, on awaking, more than a confused memory of such events. During the attack the disturbance of consciousness is usually not very profound, because the individual is often awakened by noises or sudden contact. The sureness of movement amid dangerous surroundings,

for example, in walking upon a roof, can only be explained by the imperfect conception of the situation, where danger is not recognized, so that dizziness and fear are wanting.

A more profound disturbance of consciousness is exhibited in the various forms of somnolence. Consciousness is impaired or entirely wanting for long periods; these are only interrupted for short intervals during which the ingestion of food and the wants of nature are attended to. These conditions are distinguished from normal sleep by their long duration and by their causation; this may consist of an organic disease of the brain or a purely nervous cause, with or without previous exhaustion.

The so-called dream conditions, which appear in attacks of longer or shorter duration, are a peculiar form of impairment of consciousness. Special importance attaches to those which develop during or after spasmodic seizures, and in which violent acts are occasionally performed. Psychologically we have to deal with a disorder in the interpretation of all impressions by the attention, and everything points to a disturbance of the apperception organ, explicable by variation of the amount of blood in the cerebral cortex. At the end of this series of different degrees of impaired consciousness stands unconsciousness in which physiological stimuli are no longer converted into mental processes. The unconsciousness may be temporary, as in drunkenness, severe convulsions, febrile conditions, inflammations of the brain; or permanent, in the course of many chronic forms of insanity, especially in imbecility.

The unconsciousness of sleep may suffer an interruption which leads to a changed condition in the shape of dreams. Products of decomposition arising from the processes of disassimilation act during sleep as irritants and overcome the existing inhibitions so that individual concepts appear and may be united with feeble sensory impressions. The latter are illusions, but may be associated with true hallucinations arising from memory-concepts, and may enter the impaired consciousness. The most abundant material is offered by the movements and processes within the

body, the muscæ volitantes, and auditory impressions due to tinnitus.

It is an important fact that dream-like conditions may be produced by certain poisons and drugs. Atropine arouses memory-pictures of ugly and terrifying things, cannabis indica of beautiful things, ether produces the feeling of flying in infinity. Hence, different mental activities are excited singly, or, as in chloroform narcosis, a definite order in the implication of certain parts of the brain can be recognized. Dreams are thus characterized as morbid processes, but, like central hallucinations, they grow insensibly out of normal, undisturbed sleep. Whether this partial activity of the brain in artificial and natural dreams is accompanied and caused by circulatory conditions cannot be proven, but may be assumed from its similarity to the condition of sleep.

Allied to sleep is the disturbance of consciousness known as hypnosis. The latter is distinguished from sleep by the fact that only some of the cerebral functions are inhibited. Unlike somnambulism, hypnosis is an artificially produced condition. After the hypnotized individual has passed into a condition of half-sleep, in which catalepsy finally develops, the peculiar stage of hypnosis proper develops. Voluntary movements are again possible, and sensory impressions may be received, but consciousness is restricted in a peculiar manner, so that it is only susceptible to certain external impressions. The individual may be led by suggestion because the fully independent faculty of active attention is wanting. Hence, this disorder must be sought in the apperception-organ. Experience shows that the frequent production of hypnosis may lead to mental disturbance, especially as persons suffering from an hereditary taint are best adapted to hypnosis. Although favorable results from the employment of hypnosis in the treatment of psychical affections have been reported, the condition is still so obscure that we cannot yet recommend it to the practical physician. Apart from so-called hypnosis major, which is due in great

measure to an hysterical basis, ordinary artificial hypnosis may be regarded as a partial sleep. The assumption also appears to be justified that the differences between sleep and hypnosis are due to the varying rapidity with which the different senses are put to sleep, hearing and muscular sense being the last to become exhausted. The decisive influence is exercised by attention, and in this connection we may assume longer or shorter periods of contraction of individual vascular tracts in the brain as the intermediate accompanying phenomena.

Much more importance attaches to catalepsy, which is either a part of other diseases, or appears independently. It is a symptom-complex, composed of impaired consciousness, with anæsthesia, muscular rigidity, and more or less flexibility of the limbs. Retention of urine and deprivation of food are subordinate symptoms, which are explained by the motor and psychical condition. The term catalepsy is also employed when one or the other of these symptoms is absent. The basis is always a mental disturbance of some kind, hysteria, melancholia, progressive paresis with weakness, or a more independent disorder of consciousness. Upon this basis develops the peculiar muscular rigidity, associated with so-called waxen flexibility. This combination is difficult to understand physiologically; the tetanic rigidity first develops, later the flexibility. The explanation is not proven but plausible that the rigidity is due to unequal innervation of antagonistic muscles, while, in waxen flexibility, they are innervated, at any moment, with complete uniformity. The condition is generally involuntary, but sometimes semi-voluntary as the result of delusion or as a sort of play, and is then confined to a few groups of muscles. Hysterical individuals and some paretics have a tendency in this direction. As a matter of course, a certain degree of clearness of consciousness is then necessary. The more consciousness is impaired, the more general is the extent of the motor symptoms. The location of catalepsy must be referred to the frontal lobes, the disturbance of consciousness point-

ing to the apperception-organ, the motor symptoms to the adjacent central convolutions.

Stupor and ecstasy may resemble catalepsy in their outward manifestations, but have a different origin. These disturbances of consciousness are associated with definite, partly voluntary and conscious notions. According as these concepts are sad or cheerful, stupor or ecstasy will be produced. Self-consciousness is not entirely abolished, but the ability to concentrate the attention actively is merely impaired, slowed, or accelerated. Hence, stupor and ecstasy may be influenced by delusions which are generally absent in catalepsy. But as an organic basis is not wanting in stupor, it is associated with other symptoms, such as slow, superficial respiration, circulatory disturbances, slowness of digestion, etc. As the final effect of a melancholic condition, stupor very often passes gradually into dementia. The inability to distinguish these conditions accurately is evident from the fact that the term stupor is also applied to conditions of exhaustion after epileptic convulsions, maniacal excitement, and febrile diseases. Ecstasy is distinguished from catalepsy only by its development from delusions, and its combination with hallucinations.

3. *Disorders of Self-Consciousness.*

The above-mentioned signs of mental disturbances, especially of consciousness, necessitated a distinction between consciousness in general and self-consciousness. We have already applied the term consciousness to the occurrence of impressions of internal and external experience, and their conversion into mental processes. In the to-and-fro movement of concepts in this consciousness, one group of coherent individual concepts is distinguished apart from the others; it is the group whose source resides in ourselves. The sensory concepts received from our own body and the movement-concepts of our limbs are coherent and permanently present. At any time they are readily associated with other concepts, according to habit

or voluntary effort. This consciousness of our own personality is self-consciousness. In mental disorders a change of self-consciousness may be one of the most prominent signs of disease. The most important form of the disorders of self-consciousness is the consciousness of disease. Long before the beginning of the disease proper, there is often a terrifying feeling of impending loss of reason, especially in individuals with an hereditary taint. This feeling is sometimes so vivid that the patient seeks admission into an insane asylum. Even at the height of the disease some patients feel that there is a disturbance in the course of their moods which is not dependent on external influences. As a rule, morbid general sensations constitute the direct basis of this diseased self-consciousness. But while the patient is struggling against the constantly recurring morbid impressions and feelings, the well-defined concept of his own ego is becoming changed. Here it loses, there it gains elements by detachment or combination with other groups of concepts, and with the feeling of resistance the normal self-consciousness disappears or changes more and more. The association with the past is lost, and the present personality appears foreign to the former; if fragments of the former have been retained, delusions of double personality may develop. At other times self-consciousness disappears so completely that the patient regards himself only as an object, or even this becomes so remote from the circle of inner self-observation that a nihilistic delusion develops, the notion that nothing exists or that the person of the patient no longer exists. This absence of self-consciousness has been often found associated with atrophy of the cortex, especially in dementia paralytica—another proof that the frontal lobes are intimately related with these disorders. But apart from these special forms of the feeling of being sick, it is one of the most striking and widespread symptoms in almost every psychical affection that this feeling is lost after the affection has lasted a long time. Patients in an asylum often exhibit a clear comprehension of the speech and

acts of their fellow-patients, but have false judgments concerning themselves.

The convalescent patient recovers his former self-consciousness and gains a clear insight into his disease. This is one of the most important signs of beginning or completed recovery after disturbances of self-consciousness and mental diseases in general.

B. DISTURBANCES IN THE ASSOCIATION AND COURSE OF IDEAS.

The disturbances of consciousness which we have considered in the previous section are observed, in not a few cases, in those who are mentally healthy. The disorders in the association and course of ideas, which we will now discuss, may also occur occasionally in the sane, but in general they are evidence of an already existing or developing mental disorder.

1. *Apperception and Association.*

As the boundaries of inner experience are also the limits of consciousness, the elements of the disorders now under consideration belong within these limits, inasmuch as they also occur within that broad field of cerebral life from which individual concepts may reach apperception. We must distinguish, however, whether the material of the concepts is called forth actively by attention or is passively noticed. In the flow of cerebral life concepts appear in great numbers; if a sort of struggle ensues between them to reach apperception, we feel this internal activity as an action to which we apply the term active attention. But if one of the concepts in question is favored by its characteristics to such an extent that the apperception of another concept cannot come into question, it is received merely by passive attention. With the ideas which are aroused by external sensory impressions are constantly combined the memory-pictures of former ideas; the association of the ideas furnishes the material from which the attention

collects individual elements. When the selection is made from a number of such concepts, the attention is active and only brings up one after another for interpretation; the attention is passive when an undoubted association of individual concepts has taken place. The lunatic is very often in such a position that he is only passively and not actively attentive to the internal processes of his experience, and constantly grows more and more impotent against the successively appearing ideas and their combinations. Not alone the present concepts come into play, but the entire prior development of consciousness is superadded. There is, however, an imperfect interpretation of the concepts which have developed in the past and the present, and their irregular combination leads to incoherency. When active attention has not yet disappeared entirely, the disorder appears as absent-mindedness. When active attention ceases entirely we find conditions in which the combination of ideas may even be made to depend upon the will of others, as in suggestion. This is done experimentally in hypnotism, and the so-called epidemic spread of mental disorders is also explained in a similar way. The predominance of irregular combinations of concepts over the regular arrangement into clear notions is the first and most important sign of mental weakness. In congenital and acquired feeble-mindedness there is no regular and close combination of new and old concepts. But in all conditions, which vary from mental health to complete imbecility, the disturbance appears in the greater or less difficulty of active selection among the concepts and their combinations. Purely external influences make themselves felt, as, for example, the association of ideas with words of similar sound, which are either spoken by the patient himself or by others. Such persons are apt to speak in verses which have no connection and merely show a relation of sounds, especially of the terminal words. Other patients grasp only a single word in a conversation and associate with this the series of ideas which are then appearing in their consciousness.

2. *Accelerated and Retarded Course of Ideas.*

If an accelerated flow of ideas takes place, as in some conditions of excitement, the overfilling of consciousness in itself leads to incoherency. This requires, however, a high degree of acceleration of the flow of thought; in moderate degrees the combination of different series of thoughts is facilitated. The individuals then become more brilliant and witty; the successful expression of delicate irony and the ability to rhyme easily are sometimes found in such cases. But when the concepts follow one another so rapidly that they cannot enter their suitable combinations, a wild flight of ideas is developed. In the highest degrees, even vigorous external impressions are no longer able to restrain the hurrying flood of ideas for a moment.

Incoherency may also arise from slowing of the concepts and their combinations. The anxious patient becomes confused because his thoughts appear slowly. Confusion characterizes conditions of mental exhaustion with a slow course of thought. Sometimes the incoherency is only apparent, if aphasia, due to a definite anatomical lesion, is present. Another result of the slow course of thought is the monotony of the ideas. The violent psychical pain completely fills the consciousness of the melancholic patient, and allows nothing else to develop; the march of thought sometimes appears to stand still entirely, and only single words and phrases are repeated for hours.

The insufficient change of concepts is not always due to their slowness of succession, but occasionally is dependent on their long duration. This disorder is often observed, in a mild form, in healthy individuals; we cannot escape certain notions, "we can't get rid of the idea." This is especially true of rhythmically associated groups of ideas, such as verses and melodies. As a rule these phenomena disappear rapidly, at the most in a few days; if they last longer, they appear to us to be morbid, and are associated with disagreeable feelings. "Gruebelsucht" is

a remarkable clinical form of this disturbance. The ideas which force themselves upon consciousness almost always appear in the shape of questions, usually of a religious or metaphysical character. This disagreeable feeling of compulsion is also common to imperative conceptions which appear in various other affections. The feeling of compulsion on the part of the patient must be emphasized because this alone distinguishes it from delusions. Numerous patients complain that they cannot get rid of certain annoying thoughts whose folly they recognize, and which lead them to commit actions which they find laughable or disgusting. In the individual cases, the contents of the imperative conceptions are always confined to a narrow circle. The psychological explanation of a large number of these imperative conceptions seems to be hinted at in the consideration of the circumstance that, in our mental processes in general, we usually employ comparison, and attempt to make a selection among antagonistic concepts.

While, in this play of question and answer, the healthy consciousness at first shows no preference among the numerous ideas which lie ready for combination, but first compares the single ones, in the morbid condition an antagonistic idea enters consciousness with imperative force. Such questions are: "Why is the moon round and not square?" or, "Why are twice two four, and not six?" or, "Why is not the stove in the middle of the room?" Or the question refers to an action just completed, and runs: "Why have I done this, and would not the opposite have been preferable?" Or an individual doubts whether he has closed the door properly or has properly addressed a letter, and cannot rid himself of the thought even after renewed examination. The antithesis of the present situation always forces itself into the course of the patient's thoughts: on a tower, he thinks of jumping down; near a locomotive, of throwing himself in front of it; in an open square, of the dread of being unable to pass. In the latter cases the imperative notion may be favored by the

occurrence of vertigo. Others cannot remain in closed rooms, from the dread that some accident, such as fire, may render their escape impossible.

But the imperative conception does not always appear in relation to an antithesis; it often originates immediately and directly, and is not found in the shape of a question. The patient occasionally can repress the developing thought before it pushes itself distinctly into consciousness. But if this is no longer possible, and the single independent concept becomes firmly rooted, a transition is furnished to the stage in which the hitherto strange notion appears natural to the patient. Previously he had attempted to correct the idea, which was recognized as morbid, by all other ideas at his command, but now this single one becomes the fixed point around which all others are grouped, and thus a form of delusion develops.

3. *Delusions.*

Delusions are false judgments, and hence closely allied to errors in their development and contents. Superstition shows a transition between delusions and error. Common to all of them is a weakness of judgment, which is either congenital or acquired. Acquired lack of judgment characterizes delusions. Every healthy individual makes mistakes, but he is able to correct them, according to the degree of his congenital and acquired mental abilities. Superstition, as a result of education, and an expression of the general condition of culture of the community, is influenced with much greater difficulty; but, unlike delusions, it does not always persist against all opposition, as a firm acquisition of the diseased brain. We must assume a disease of the brain, because the development of a delusion is either associated with an hallucination, or can only be explained by a central irritative condition. According as the connection occurs only among previous remembered concepts or as these are associated with new external sensory impressions, delusions exhibit a close re-

lationship to hallucinations or illusions. A false judgment is due, however, only to the uncritical acceptance of the combination of ideas which occupy the foreground, and this depends on some morbid condition of the brain. Hence a certain degree of mental weakness is necessary to the development of delusions. The imperfect comprehension of the morbid element indicates in itself the weakness of judgment, and this is not found in imperative conceptions. The more frequently and vividly hallucinations develop in a brain, particularly when several sensory tracts are affected at the same time, so much the more readily is judgment disturbed. Even when the hallucinations subside, the patient, as the result of the underlying weakness of judgment, is no longer able to escape from the morbidly facilitated concepts. Here his own personality takes part in the process. The disappearance of more profound sympathy for others, especially for members of his own family, is one of the most certain signs of the beginning mental weakness which accompanies delusions. When several delusions exist, the lack of judgment is generally so great that the patient makes the most contradictory statements, and his previous personality appears to him to be entirely changed. If the power of judgment is more marked, the patient generally eludes questions concerning his delusions, whose strange character still astonishes him somewhat. Sometimes he makes an explanation by means of comparison; for example, he states that it is as if this or that sensation is produced by the external influence of other persons; more frequently he simply states that things are as he says. The hallucination, which is usually underlying, is so vivid that the connection with other concepts of former experience becomes easy to his impaired judgment and requires no explanation. Delusions which develop directly, without hallucinations, are more apt to change and disappear.

The contents of delusions are as manifold as the ideas of man. Like the latter they are associated chiefly with expression by means of language. Hence the largest

number are based upon a combination with such auditory concepts as can be expressed in speech. There are important clinical differences, however, so long as the mental disturbance is in process of development, and the chief difference in their contents depends upon whether the patient is in a cheerful or depressed mood. Numerous hypochondriacal delusions refer to the body and result from disturbances of common sensibility. The patient is convinced that he is suffering from a severe disease (diseases of the heart, lungs, spinal cord, genitals). Sometimes the dreaded disease changes or several diseases are feared. Sometimes the hypochondriacal delusion has very strange contents. Headache or painful sensations in general are attributed to changes in the brain. The patient then feels that his brain has dried up or disappeared, or has undergone some other peculiar change. One patient was convinced that the posterior parts of his brain were removed, and that he possessed only a face and a small part of the brain. Or the head is excavated, and the brain replaced by a sponge or a bladder. Still more varied are the delusions which are associated with conditions and sensations in the digestive organs. The mouth and anus appear closed; the œsophagus is so narrow that deglutition is impossible. The stomach is filled with glass and pieces of wood; the food is retained in the body and is gradually deposited beneath the skin. Other hypochondriacal delusions develop from irritative conditions of the sexual apparatus, especially in young people who practise masturbation. The dread of being impotent prevents the performance of coitus. Sensations in the skin cause repeated washings for fear of having been made unclean by contact with some object. The dread of finding sharp objects in the clothes extends to other objects, and a so-called fear of contact develops. As various organic feelings often combine to produce hypochondriacal delusions, the notion of bodily transformation often develops, so that the patient thinks he is bewitched or is controlled by magnetic machines. In the highest grades, the entire body

appears changed, and the notion develops that the patient is converted into an animal.

Delusions very often assume the shape of ideas of persecution, which vary according to the predominant affection of the different senses. The patients taste or smell poison in the food; gestures or remarks of others are interpreted as inimical influences. The tendency to refer all events to their own personality leads them to find, in letters and newspapers, remarks which refer to themselves.

Associated with these conditions is the delusion of having committed sin, which is one of the most constant symptoms of melancholic forms of disease. Many believe they have committed a great wrong which they cannot describe more closely, others accuse themselves of the most fearful crimes. The majority dread or even wish the most terrible punishment as penalty for their crimes.

Unlike the depressive delusions just mentioned, there are others of an expansive nature. In milder degrees they appear merely in the form of an exaggerated idea of the patient's bodily and mental abilities. He feels able to perform great feats of strength, although his physical powers may, in reality, be very slight. The more judgment is lost, the greater is the difficulty experienced by the patient in recognizing the morbid element of such notions. While the maniacal individual still retains so much judgment that he remains within possible bounds, the feeble-minded one becomes, in periods of excitement, unbounded in the contents of his delusions. He has hundreds and thousands of children, he is Christ or God, and speaks all the languages of the world. He claims to be physically able to lift the universe. And yet a good share of these claims is merely boasting and fantasy. Indeed, as the excitement of the feeble-minded subsides, questions are almost always necessary in order to lead the active play of the fancy into the production of expansive ideas.

Although many delusions are accompanied by corresponding feelings and moods, antagonistic moods are also observed at times, and, on the other hand, all emotional

excitement is sometimes absent. This occurs both in convalescent stages and in the beginning of terminal dementia.

If a high degree of excitement or depression is no longer present, and feeble-mindedness has not yet developed, delusions may appear as attempts at explanation of the patient's own morbid condition. These are not so much the results of hallucinations present at the time, but are trains of thought which appear coincidently with the hallucinations or independently.

The following fact is of prime importance as regards the interpretation of the development and course of delusions. In patients belonging to the most different classes, and in all parts of the world, we always find certain definite series of delusions in constant repetition. In many such series of ideas persist throughout the entire course of the disease; they are called fundamental or primordial. Like central hallucinations and imperative concepts, they either develop directly in the diseased brain or are excited by slight external impressions, or by processes within the body. The latter factor requires some explanation. In ordinary health, but much more frequently in morbid conditions, irradiated sensations in the body are often associated with irritations in the same or other nerve tracts. For example, auditory impressions often produce sensations of light, or colors give rise to auditory impressions. In such cases of irradiation it can often be proved that the origins of both nerves lie adjacent to one another. In a similar way the development of certain delusions is connected with sensations located in adjacent parts of the brain. But as the expression in speech of these associated sensations always revolves within very narrow circles, the contents of the associated concepts are also limited by certain individual ideas and words, and these recur constantly in all individuals after the same internal stimulus. This sheds light on the uniformity of so many delusions in different individuals. They must develop in certain anatomical tracts, and find expression only in generally known terms of speech.

It is only after long duration of the delusions that these become associated with series of thoughts due to logical inferences. These must be regarded as real attempts at explanation, but soon become part of a regular system of delusions. This form often exhibits a very uniform character in the shape of so-called querulous insanity. A patient with morbid self-esteem, who has suffered some injury, usually well-merited, acquires the notion that bitter injustice has been done to him, and that his honor requires him to fight the matter. Accordingly he begins one lawsuit after another, and sacrifices home and fortune in obedience to his morbid desire. Of course, such results only follow when the delusion is attended by a certain degree of mental weakness.

Delusions of a depressive and expansive nature are not infrequently associated with one another. The persecuted individual attributes the persecutions to his own assumed personal superiority, or the supposed possessor of great wealth thinks this is kept from him by enemies. In these cases one concept is often due to the other as the result of an attempt at explanation; in this way, also, fixed delusions often develop after the morbid condition has lasted a long time. The more often the delusion appears, the more readily does it displace antagonistic concepts. The interpretation of new impressions always occurs in respect to the already morbidly changed concepts, and so completely displaces the relation of the patient's personality to the outer world, that he thinks he has become a different individual. The logical manner in which such patients defend their delusions is often astonishing; the concepts have been accustomed to run their course in certain logical forms so that it is difficult for the observer to detect the flaw in the first links of the series. By practice in defending their delusions the patients often attain such dialectic skill that they conceal the weak points, and often deceive even judges. The patient's relatives often believe that he has such and such a fixed idea, but that he is otherwise sound in mind. Careful examination, however, shows

that extensive series of ideas are displaced by delusions, but the predominance of certain ones creates the impression that these alone are present. Mental disorders are always complicated and are never confined to single tracts. The very impossibility of correcting a so-called single fixed idea shows a want of judgment, which is due to mental weakness.

4. *Disorders of Memory and Fantasy.*

Among the combinations of concepts in general, great importance attaches, in regard to the knowledge of insanity, to those in which the mental faculties, known as memory and fantasy, are involved. Memory is a primordial property of nerve substance, and is the result of oft-repeated impressions. Although we do not understand the psychophysics of this process, the ability to recall ideas is a fact of daily experience. All concepts are conveyed originally through the senses. Many impressions may be retained without previous apperception, and appear later in consciousness, from other causes, as something apparently foreign; they adhere to the nerve-substance and form involuntary recollections. Many belong to conscious experiences, and then can be renewed voluntarily. We must therefore distinguish a memory for the recollection of concepts and for their renewal. After periods of unconsciousness the ability to renew impressions received during that state is impaired, but these may subsequently enter consciousness and be remembered. In the voluntary renewal of concepts there is, at the same time, a reference to the contents of consciousness, the renewed ideas are recognized, and referred directly to the past. This more restricted memory occupies a higher plane than the unintentional recurrence of concepts. The relation and combination of remembered concepts, with the contents of former experience, are utilized particularly by the group of ideas constituting the self-consciousness of the individual's own personality. They are arranged in memory as a contin-

ued, uninterrupted series. Only the most recent elements of this series remain as complete parts of memory, further back more and more details are obliterated, and still further back only a few recollections remain. This renders possible a process in memory which is called localization in time. As this power varies greatly in healthy individuals, the physiological brain formula of each individual must be considered in examining mental disorders. The organic basis of memory, the cerebral tissue, does not possess the faculty of retaining impressions in a uniform manner, so that the power of voluntary recollection—the other side of memory—may fall into the background. This is especially true of the insane. In the arrangement of successive concepts so many links of the chain have disappeared, that, on account of these lacunæ in memory, the patient has no unit for measuring time.

Patients often do not know how long they have been in the asylum, when they had dinner; weeks appear to them like days, years like months. The memory of recent events is first lost, and finally the memories of childhood. The memory of feelings and the possibility of the vigorous performance of actions first begins to diminish after the loss of the memories of childhood. This is explained by the fact that recent events adhere more loosely to the nerve substance and cells, while those which have been repeated for years and in a measure have become organic adhere more firmly. Feelings are more inborn and are more the expression of organization than are the acquisitions of the intellect, and hence they adhere longer than the latter. Finally, the memory of the mechanical movements necessary for the daily wants of life is the last to be extinguished. In some cases of recovery after concussion of the brain, a restoration of memory in the inverse order has been observed.

The strength of adhesion of certain concepts depends not alone on the length of time which has elapsed since their development, but also on the character of the special nerve tissue of the brain. Memory also depends very

materially on the strength of the impressions. Hence it is evident that the affections of memory must be very manifold.

One of the most common disorders in daily life is to forget a word, which is "on the tip of the tongue." We may even have a notion as if the approaching memory is again receding. This is to be distinguished from weakness of memory, in which the renewal of concepts is imperfect or entirely absent, because the organic nervous substance no longer contains the former impressions. On the other hand, absent-mindedness occurs when the relation of the concepts to former events of our own consciousness is disturbed. The latter is a temporary, functional disorder, so that at other times the renewal of the concepts in memory is easily effected. Forgetfulness, which forms a transition to the weak memory of old age, appears to depend more upon an organic basis. In old age, there is only a passive yielding to external impressions so that they disappear rapidly from memory. Finally, the old man remembers nothing of the present, while his vivid recollection of times long past becomes so much more striking. A similar condition obtains in numerous forms of insanity, particularly those associated with conditions of weakness.

Every impairment of consciousness interferes with memory. From a loss of memory concerning a certain period of time, we infer unconsciousness during that period. In the impairment of consciousness known as "daemmerzustand" (dreamy state, literally a condition of twilight), the capacity of remembering events which occurred at the disappearance of consciousness is often restored, but the impressions adhere feebly and the remembrance is then very brief. Immediately after the act an epileptic may say distinctly that he remembers certain details, but at the subsequent judicial examination these have disappeared from memory. In conditions of excitement, likewise, the interpretation of the surroundings is often inaccurate so that the memory thereof is merely summary,

and does not go into details. Conditions of exhaustion of the nervous system, for example, after sexual excesses, febrile diseases, etc., lead temporarily to mental enfeeblement, during which the reception as well as adhesion of new impressions are rendered difficult or impossible. Some patients subsequently remember a few events during the period of mental disturbance, others remember absolutely nothing. Thus patients, after the lapse of a long series of years, believe that they are still at the same age as when they were first attacked. In these cases new impressions during the period of sickness have not become permanent constituents of memory. It is also an evidence of the imperfect reception of concepts in the memory when patients again perform the same acts which they had hardly finished, or tell a story several times in succession to the same person. This is generally due to severe affections of the cortex. At the same time the renewal of old experiences is soon confined to tracts in which long practised habitual concepts are found. Even in imbecility teachers retain the ability of repeating the rules of grammar, physicians of writing prescriptions. It is an evidence of great mental weakness when forgetfulness in these little matters occurs in daily life, and is not noticed; for example, if an accountant makes the same mistake after repeated calculations, if a man leaves his house several times and forgets to close the door, or goes out without his hat, etc. As a matter of course, such instances of forgetfulness are morbid only when frequently repeated; they are probably due, in most cases, to extensive and deeply spreading diseases of the brain.

At all events an organic basis attaches to certain defects of memory, which are characterized by the loss of certain definite groups of concepts; as they are often associated with focal diseases of the brain, they are so much less recognizable as complete psychoses. They include so-called amnesic aphasia, disorders of writing-images, etc. In a few remarkable cases temporary loss of a single foreign language, of numbers and the former musical ability, has

been observed, while all the other properties of memory remained intact. Hence the term local memories has been employed. If the forgotten powers return in a few days, there can only have been a disorder of the cerebral circulation or a slight mechanical interruption to conduction. After a concussion of the brain, a surgeon forgot that he had a wife and children, while in other respects his memory was intact.

Morbid change of memory may also be manifested by increased reception and facilitated renewal of memories. The common intensification of memory in children finds its counterpart in the similar ability of some feeble-minded individuals, although in the latter it is almost always one-sided.

The increased reception of the material of memory depends very materially on the mood. The melancholic generally notices only sombre impressions and neglects cheerful ones. On the other hand, the maniacal individual manipulates chiefly the cheerful impressions, and associates only flattering remarks with his increased self-esteem.

The insane exhibit notable disturbances in the truth of their memories; as the mood of the moment exercises the greatest influence on the manner in which memory-pictures are conceived, a falsification of the previous impressions is thus produced. Hence his entire previous life appears to the melancholic patient as a chain of sad experiences and evil deeds. At other times the chief factor is the association of the contents of the morbid consciousness with accidental external impressions. The deception of memory is then shown by the fact that the patient believes he has already seen persons or objects in his vicinity. A somewhat similar condition is that in which, while a certain situation is being noticed, the impression is created as if the same situation had been lived through before. Such notions are very fleeting and many follow one another within a short time. At first the individual is surprised by the impression, and seeks for the completion of the disagreeable unclearness of his memory. This feeling of

uncertainty inhibits the voluntary combination of the concepts and renders nugatory the criticism of the unusual contents of consciousness.

Epileptics exhibit very decided deceptions of memory in connection with the attacks. The remembrance of having already gone through the same experience extends over a greater period. On admission to the asylum the patient states not alone that he has already been there, and that this or that has already been said to him, but all the events of the present become to him memories of the past. This deception may last months and years, and gives rise, in the patient, to the notion that he is leading a recurring double life. In this way poetical fancies confirm the belief in the transmigration of souls. When the notion of double life appears prominently in paroxysms, it is known as double consciousness. Here the renewal of even the most common concepts is lost for days or months. If the old condition returns, the old memories return, but those belonging to the recent, almost childish condition, remain wanting. One patient narrated during the next attack the things that had occurred to her during the previous one. Similar phenomena are also observed in periodical insanity.

The disorders of memory depend mainly upon peculiarities in the course and combination of series of concepts which are in themselves independent, and stand loosely associated. An allied activity, but in which, at first, a voluntary selection completes the combination according to a definite plan, is that faculty known as fancy. Its essential characteristic is thinking in images, while the articulate expression of more sharply defined notions is wanting. Even as children we abandon ourselves to the play of our ideas; the adult may likewise give free rein to his fancy. It takes part in dreams, and it is probable that vivid fancies and dreams are very often mistaken for hallucinations. It is also probable that hallucinations would occupy much less space if we could sharply distinguish them from the notions of fancy. The latter are

often associated with bodily sensations; the hungry individual dreams of feasts, the thirsty one of delicious drinks. In the hypochondriac the fancy is busy in depicting future diseases. The melancholic patient associates anxious feelings with notions of capital punishment, which the fancy paints in all its details. The patients are engaged in building a world of fancy, without, however, being entirely convinced of its reality. Without paying any attention to those around him, the patient makes speeches, abandoning himself, like an actor, to the situation of the moment. He walks up and down, and has a lively conversation, so that it would appear as if he saw or heard imaginary persons. But when his attention is attracted by the questions of the observer, he interrupts himself, smiling, for a certain length of time, or again resumes his harangue. This lively play of fancy entertains the patient. It occurs particularly during conditions of excitement, and after recovery the patients explain that they carried on conversations, not as the result of true hallucinations, but that the vividly excited fancy impelled them to utterance in speech. Feeble-minded patients also delight in boastful descriptions, but the latter result mainly from the questions asked them and lack the creative element of fancy.

C. DISORDERS OF EMOTIONAL LIFE.

1. *Affects, Sensual and Higher Feelings.*

Acute feelings always produce changes in the course of our concepts, and the latter, on the other hand, strengthen the feelings. Hence we call them affects. As a rule, violent feelings suddenly inhibit the flow of ideas; this may result from severe pain or from unexpected surprises. It is only after the cessation of the affect, as a rule, that the cause appears, and then fright, wonder, joy, or anger may become apparent. Joyful affects subside more rapidly than gloomy ones, which have a tendency to pass into permanent moods. By means of numerous

physical sequelæ the affect reacts upon the emotional excitement. Angry gestures increase anger, palpitation increases the fear of the timid individual. Finally these sequelæ exhaust the affect; anger wears itself out, tears soothe pain. Otherwise the one who is subject to an affect loses, when he is no longer master of his own movements, the mastery over his own feelings and ideas. Hence, there are affective conditions, with complete confusion of ideas, which are distinguished only in name from a maniacal seizure. Between the affects of healthy ndividuals and these extreme conditions of excitement there is an entire series of intermediate conditions which are arbitrarily called healthy or morbid. Nevertheless there is a certain average, from which the deviation may not be too great, without indicating a disproportion between the degree of stimulus and the excitement. Sensations and feelings, which produce pleasure or pain, are sensory subjective feelings. The sum of all feelings which arise from the sensations of our own body constitute common sensation. The most important part in this respect is played by conditions of the viscera, but sensations in the eye and ear also form part of common sensibility. In higher degrees the feelings of pleasure or pain produced by these sensations lead to increase or diminution by bodily movements and then pass into impulses.

But the disorders of impulse fall within the domain of action, while for the present we confine our attention strictly to disturbances of emotional life. We have to consider not alone the disorders arising from sensual (in the philosophical sense) feelings, but also, and to a greater extent, those arising from the higher mental feelings, *i.e.*, all emotional movements which accompany the association of ideas and the mental processes attended with conscious selection.

An increase of the feeling of pain is present in many mental disorders. All stimuli of the outer world and of the body itself then increase the emotional excitability; even the stimulation by customary impressions becomes a

source of painful feelings. This is observed especially at the beginning of many forms of insanity. It is mainly a sign of depressed melancholic conditions, but may occur temporarily in cheerful excitement. The term psychical pain has been applied to the highest degree of these feelings. Such conditions are distinguished from bodily pain only by the site of development. Psychical pain is a result of nutritive disturbances or grosser changes in the brain, and does not disappear until these causes are removed. So long as these exist it occupies the foreground of consciousness, and represses all other feelings and ideas. In slighter grades there is an ill-defined feeling which is manifested as restlessness, anxiety, or sadness. Out of this feeling, which forces every impression into the same direction, develops the sad mood in which sympathy and love excite only mistrust and hatred. The increased sensibility brings everything into relation to itself, because it is really affected unpleasantly by everything. Being distrustful, the patient ascribes his condition to noxious influences in the external world, considers himself persecuted, or seeks the cause of his malady in former actions which now appear sinful to him. The frequent association with hallucinations increases the sensibility and confirms the resulting delusions.

The combination of the disturbance of bodily "sensual" feelings with the gloomy contents of consciousness depresses the self-esteem and produces, as a rule, a vivid feeling of illness. Another result of the inhibition of the flow of thought, which follows the predominance of gloomy notions, is the restriction of thought to the patient's own personality. The feeling of sympathy for others is extinguished. If the original gloomy affect is lost during the course of the disease, the loss of sympathy becomes a sign of mental weakness and the absence of all higher psychical feelings. The feeling of shame is also lost. Hence, even a diminution of the painful feelings has set in. In certain congenital conditions of feeble-mindedness the feeling of shame and of sympathy for others is

not developed, but we here find a pronounced egoism. The lack of heart and tenderness is also a striking symptom of many acquired mental diseases. The disappearance of disgust at immoral and unæsthetic actions and speech is also one of the gravest signs in the development of the disease. This symptom also has a very bad prognostic significance in the transition into mental failure. It is associated with diminution of self-esteem. In some conditions of excitement this is not such a serious matter. But if a patient, who is not emotionally excited, does not hesitate to do indecent things in the presence of others, it constitutes an evidence of great mental weakness or profound disturbance of consciousness. The absence of the higher mental feelings, especially religious, ethical, and æsthetic, their disappearance or imperfect development are forms of the diminution of the painful feelings, which are almost always morbid. A special form in this category is a part of congenital weak-mindedness, and is often called moral insanity.

The last-mentioned symptoms may also be attributed to a diminution of the pleasurable feelings. If the patient loses the power of enjoyment of the good fortune of himself or others, or if pleasure in higher things is restored, these signs are important. The constant feeling of illness, dependent on a nutritive disturbance of the brain, makes it impossible for the depressed patient to feel his own pleasure or that of others. A fellow-feeling may be impossible on account of the overfilling of consciousness with sad or cheerful concepts, so that even the excited patient appears as an egoist.

In him the pleasurable feelings which result from bodily sensations have undergone a marked increase. He praises his own health, declares himself capable of great feats. At the same time the course of other combinations of ideas is facilitated. Allied to this condition is that which we have already described under the term ecstasy.

By the alternation and mixture of disturbed feelings of pleasure and pain are produced groups of symptoms

which form the most frequent signs of mental disease. When there is increased excitability of both kinds of feeling, the symptom of change of mood appears.

The change from one condition to its opposite takes place with rapidity. The unstable equilibrium is deflected to one side or the other by the most trifling cause. The fact that a notion of the uncertain equilibrium of his own mood enters the patient's consciousness, results in irritable depression and uncertainty of action. On account of his irritability he is always at swords' points with those around him. The impulse to ward off all external influences occupies the foreground. In epileptics and inebriates these conditions are dangerous to those around the patient.

The change of mood is sometimes so rapid that it leads apparently to a simultaneous admixture of opposing feelings. The affect of pathos exhibits this mixture, and is indicative of disease unless founded in the previous disposition of the individual.

The temperament of the individual must always be taken into consideration; it influences the intensity of emotional excitement and the rapidity of its changes. The choleric and melancholic temperaments, which have a tendency to strong affects, are inclined to depressed moods, while the sanguine and phlegmatic temperaments, with feebler affects, turn rather toward the enjoyments of life. On the other hand, the temperaments are characterized either by a rapid or slow change of mood. In the latter event thoughts are apt to be directed toward the future. The melancholic individual is immersed in the notion of a joyless future; the phlegmatic individual adheres firmly to his notions. Easily moved by external impressions, the rapid temperament of the sanguine and choleric is fascinated by the present.

In another group of disturbances of feeling the stimulus produces the antagonistic feeling. There is a reversal or, at least, a complete turn in the connection between stimulus and sensation. We may here mention the so-called

idiosyncrasies of hysterical patients, in whom sensations, such as odors of flowers, which are agreeable to the healthy, are unpleasant, while nauseous smells produce agreeable sensations. This is indicated not infrequently in pregnancy. A practically important group of these disorders is found in the domain of sexual life. Here we find feelings of dislike against the opposite sex, of love for the same sex, with corresponding desires for sexual intercourse, usually in individuals with an hereditary taint. Such individuals are generally morbid in their entire mental development.

The higher mental feelings may also suffer reversal, as shown by the delight taken in the pain experienced by human beings and animals, by the criminal tendencies of the feeble-minded, etc. These qualities usually appear in early childhood, and thus demonstrate their hereditary basis. Similar reversals of feelings of pleasure and pain may also appear in acquired, non-hereditary forms of insanity.

2. *Terror and Allied Feelings.*

We will now consider a disorder of feeling which is firmly connected with definite physical signs. The affect of terror is associated intimately with disturbances in the action of the heart and respiration, and also of the secretory and vasomotor nerves. For this reason the condition is known as præcordial terror. The patient experiences an oppression, a pressure in the region of the heart or its immediate vicinity. He feels as if the heart were compressed, as if a weight lay upon it, or as if the chest would burst. Disturbances of respiration lead to the assertion that the windpipe is being compressed. The sensations in the throat and heart are attended with incomplete respiration, and with acceleration or retardation of the pulse. These symptoms, together with the fact of the psychical origin of terror, compel us to believe that disturbances in the cortex radiate into the pneumogastric tract. It can only be attributed to actual diseases of the heart or lungs,

in those cases in which such diseases are actually demonstrable, because, as a general thing, the origin of terror must be sought in the central nervous system. In violent terror there is almost always a temporary suppression, followed shortly by increased excretion of urine, and also of perspiration. All these physical signs also occur constantly in normal terror, resulting from frightful and gloomy impressions. In the terror of the insane, due to hallucinations and delusions, these physical elements last for a longer period. But after the prolonged duration of conditions of terror, which result from profound, even anatomical changes in the cortex, the psychical element becomes more prominent. The most violent conditions of terror, such as appear in epileptics and paralytics, and in which there is often a profound impairment of consciousness, are often attended with but slight implication of respiration and the heart's action. Some insane patients ascribe the feeling of oppression to the head, and their terror is then lacking in distinct physical signs. In other cases, perhaps, we have to deal with milder grades of terror; the faint-heartedness of some patients probably depends on a condition of mild terror.

As in all affects, so in that of terror, contractions and dilatations of the vessels play a decided part. It may be assumed that vasomotor phenomena run their course in the cortex similar to those which are observed peripherally. As very many forms of insanity are attended by affects, it is evident that changes in the pulse will be found in them. The feel and the sphygmograph sometimes disclose a peculiar pulse which may be utilized as a sign of certain forms of insanity. Thus, incurable and chronic



Fig. 7.

forms exhibit the pulsus tardus (Fig. 7), in whose sphygmogram there is an absence of the rapidly rising top of

the wave, while it falls without any secondary elevations. This is an evidence of paralysis of the vessels. The disappearance of the elastic tension of the vessels occurs in those forms of insanity which have run their course, and is also frequent in paralytic dementia. The use of the sphygmograph, however, has not carried us very far in the diagnosis of the individual clinical forms of disease.

D. DISORDERS OF VOLITION AND ACTION.

1. *Impulsive Movements.*

We have described impulse as the real element of all psychical functions, as that activity in which sensation and will are still acting in their original combination. In the disturbances of emotional life we studied, in part, the clinical significance of impulses; we will now consider their relation to voluntary acts. It is important, however, that the continued predominance of accompanying feelings and sensations over clearly volitional acts first brings impulsive life into appearance. This contrast and the predominance of feelings over volitional acts causes the deviations from healthy instinctive life. In a healthy consciousness every sensation and concept is accompanied by feelings which arouse a desire for the continuance or for a change of the existing condition. It is only when these feelings attain a more violent degree that we recognize them as an impulse. Under certain circumstances such impulses are irresistible, but generally we overcome them.

Among the morbid impulses we first mention the violent desire to use the muscles, to perform movements, *i.e.*, bodily restlessness. In maniacal conditions it is manifested by walking about restlessly, striking, shouting, etc. Very often the patient does not intend to destroy objects or molest those around him, but merely seeks relief of his overflowing feelings. Terror and frightful ideas may give rise to acts of violence. Slighter grades are found in daily life in timid and anxious people who perform all sorts of

useless movements, pick at their clothes, change their position, etc. In morbid increase of fear we find aimless wandering about by day and by night, constant opening and closing of the windows, dressing and undressing, etc. There is also great restlessness in many conditions of mental weakness, which leads to a collection of all conceivable objects. In the development of recent conditions of excitement, the gradual increase of this impulse may be noted. At first the patient is merely busy, then he walks about sometimes for hours, and exhibits other signs of excitement. At the height of the disease we find him shouting, singing, running and dancing, tearing his clothes; he adorns himself with rags and other attainable objects. He twists bundles of straw or grass, and is continually striking about him; he smears the walls of the room with fæces and washes it with his urine; or he scratches the walls, and destroys the doors and windows. In the highest grades of excitement the general restlessness is increased to such a degree that it is difficult to understand how such muscular efforts can be performed almost without interruption by an often feeble body. The maniac has no feeling of exhaustion because all the movements are performed impulsively, undisturbed by voluntary action. Such a condition may develop without coincident hallucinations or delusions. It is plausible to assume that this is due to direct irritation in those cortical regions which have accumulated memory-pictures of movements.

This development of impulsive movements, apart from every influence of the will, is shown most distinctly in the so-called imperative movements of demented individuals. These are monotonous movements, which recur regularly, often in a definite, even rhythmical series. Originally they may have been produced in great part by hallucinations and delusions, but after the disease of the brain has run its course they are left over as independent remains, and are continued as a matter of habit after their former purpose has been forgotten. These patients are

almost always wanting in the ability of voluntary selection of conscious acts. Some of them rub the scalp constantly, until large bald spots are produced; others grasp certain parts of the body, for example, the nose and ears, at equal intervals in a certain order. When disturbed, the tempo is accelerated and the movements become more violent, without losing their regularity. Other patients walk rapidly a few steps forward, then one backward or to the side, and repeat these movements innumerable times, or they suddenly rotate a few times, or they dance for hours, until exhaustion sets in, often without saying a word or making any other manifestation.

The intervening link of imperative conceptions often leads, in the non-demented, to imperative movements, which often appear in the form of imperative acts. The notion of an act, which has pushed itself with irresistible force into the patient's consciousness, drives him, despite his clear insight, to the most terrible deeds. The impulsive character is shown almost constantly by the accompanying affect of fear. These distressing conditions lead to acts which the patient abhors, but which he commits in the feeling that only in that way can he find safety and rest. Suicide, murder, and arson are acts of this kind. Destruction of objects may also take place, and exposure of the person and similar actions are also observed. The acts are usually performed rapidly and violently, and are brought about by accidental external circumstances. The sight of a knife or club rouses the conception of murder, and the terrible deed is done with the rapidity of lightning. An indefinable feeling of muscular restlessness sometimes warns the patient, and he then adopts precautions or begs those around him to do so. Well-defined delusions or hallucinations are wanting.

The acts of violence of melancholia are related to the former in their external appearance; the violent præcordial fear demands relief. An hallucination shortly before the deed, especially an auditory hallucination in the shape of brief commands, sometimes intensifies the impulse.

After the act has been committed there is generally a feeling of great relief, though this is often followed by a feeling of bitter remorse.

Impulsive acts also occur in another series of mental disorders, in which there is either congenital for acquired feeble-mindedness, or an impairment of consciousness. Hysterical and epileptic individuals with an hereditary taint, individuals who are feeble-minded from youth, paretics, or patients with simple forms of insanity which have run their course, commit fearful self-mutilations, arson, robbery, without any clear motive or distinctly conscious concepts. Even after the deed the patient is rarely clear concerning it, or it surprises the individual himself. In this category belong some cases known as impulsive insanity. A proof of the impulsive origin of these conditions is the remarkable fact that they occur in paroxysms with intervals of many years.

Suicide may occur in the insane as an impulse. This form of suicide must be distinguished from several others. If an excited patient, frightened by hallucinations, jumps through a window, or into a river, this is not really a suicide, inasmuch as the patient has attempted to avoid a danger, not to destroy his life. Or if a patient takes his life with the view of pleasing God, it cannot be regarded as impulsive. But there are cases in which the patients have an irresistible impulse to kill themselves, although they struggle against it with a clear consciousness and have no reasons for such an act. In certain families all the members succumb to this fate, and usually at the same period of life.

In the same way impulsive murder in the insane is to be distinguished from that which follows delusions or hallucinations, and in which the patient revenges himself upon his supposed persecutors or obeys a commanding "voice." A sudden blind impulse may seize an epileptic, who cruelly kills his victim and then does not remember the deed; or a patient struggles in vain against the fearful impulse and feels free only after the deed is done.

Arson is committed by some feeble-minded individuals, especially at the period of puberty, for reasons which are obscure to themselves.

In certain forms of imbecility the tendency to steal stands on the same level as the already mentioned impulse to accumulate articles. The morbid character of such impulses, however, is only determined by the proof of mental disturbance in general, which is also manifested by other characteristics of the entire personality. The single impulse is merely the most prominent sign and is apt to force the others into the background.

Definite forms of the disease are shown in the disorders of individual impulses. First, as regards the desire for food. The feeling of hunger is conveyed through the terminations of the pneumogastric. An increased desire for food and drink may appear without previous hunger or thirst, at the mere sight of food, or immediately after a meal there is an unappeasable feeling of hunger which imperatively requires gratification, but is often relieved by small amounts of food; or large amounts, even of indigestible articles, are swallowed ravenously. Often the articles ingested are nauseating to healthy individuals, or incredible amounts of edible articles are swallowed. In the latter event we assume a defective feeling of satiety. Other forms of increased hunger are based on hallucinations or delusions, but the disgusting phenomenon of eating fæces presupposes a profound disturbance of consciousnesss.

Diminution of the need of food, as part of a complete mental disorder, is almost always due to delusions of poisoning or hallucinations, and often leads to complete refusal to take food. In severe affects, there is often an independent loss of appetite, with or without coincident gastric catarrh. Continued refusal of food is usually favored by a secondary gastric catarrh, or the general weakness and disturbance of the nervous functions lead to imperfect digestion, and this in turn causes diminished appetite.

The longing for certain articles appears in the insane

sometimes as a desire for spices or strong coffee or tea. Allied to this is the desire for alcoholic drinks. One who is depressed or suffering from mild melancholia takes stimulants in order to cheer up; the excited individual endeavors to conceal his internal uncertainty by alcoholic excitement. There are also cases in which the morbid desire appears as true inebriety, especially when it occurs in paroxysms with comparatively free intervals. The impulse to drink arises from an acutely painful feeling, and an exhilarating action of the alcohol is not attained as in healthy individuals. The inebriate is not fastidious in his selection of stimulants. In a few cases they drink only water in enormous amounts if alcohol cannot be obtained. The drunken fit lasts a few days, even weeks. The chronic symptoms of alcoholism give rise to variability of the impulsive attacks, with a rise and fall of all the symptoms. The patient attempts to relieve disagreeable sensations by intoxication. For days and nights he lives in bar-rooms, unmindful of his reputation and family. As a rule, the condition is suddenly checked. The patient grows quiet, exhausted, has no further desire for drink, and gradually returns to his previous condition. Some experience a decided antipathy to alcohol during the interparoxysmal periods. A certain number of inebriates, however, are also habitual drinkers. A tendency, however slow, to mental weakness is unmistakable.

Disorders of the sexual impulse will now be considered. Many of them are signs, not causes of mental disturbance. In healthy individuals the sexual passion varies greatly in intensity, so that it becomes difficult to decide at what stage morbid excess begins. It is to be considered morbid when the sight of the nude in art produces lascivious ideas. In many insane individuals, especially females, the primary psychosis often receives a special coloring from the addition of a morbidly increased sexual desire. This is shown by the expression of the face, the constant talk concerning marriage or pregnancy, or the desire for a

uterine examination. Some of these patients manifest unusual cleanliness, are constantly combing the hair or washing the body. The bounds of modesty are overstepped by attending to the wants of nature in the presence of the physician, or by carrying around the night vessel as soon as he appears. Or the patients suddenly strip themselves on seeing a man and offer to perform coitus, or they lie in bed and imitate sexual intercourse by the corresponding movements of the body and face. Still more disgusting is the tendency of these patients to smear fæces and urine, and this connection of disordered sexual sense and olfactory sense reminds us of the clinical, and perhaps anatomical, association of these functions. Sexually excited patients often have distinct olfactory hallucinations. Special odors sometimes give rise to sexual fancies. The greatest increase of this disorder leads to violent assaults upon men, vile and abusive language being employed in order to conceal the true feeling. At other times similar attacks occur as the result of annoying feelings, and these conditions must be sharply differentiated. The term nymphomania, applied to the most extreme cases, is a misnomer, because the condition is not an independent disease of the sexual sense.

The frequent combination of religious mysticism with sexual irritative conditions is an important fact. Devout prayers in sexually excited individuals, uninterrupted religious exercises, constant reading of lives of the saints, which are full of the temptations of the flesh, the occasional occurrence of the most terrible orgies in certain revivals show the causal connection and clinical relationship between religious fervor and sexual desire. The transmutation of the sexually colored contents of consciousness into firm delusions retains, in these cases, the striking association of religious and sexual elements; the patient calls herself the bride of Christ, or the Virgin Mary. This combination is more frequent in women, but in men there is also found a constant association of religious delusions with sexual irritative conditions which,

especially on an epileptic basis, often lead to severe conditions of excitement attended with violence.

Sexual desire may also diminish in insanity. It may be entirely absent in dementia, and is occasionally diminished in melancholia or conditions of exhaustion. Diminished sexual desire is sometimes a sign of progressive disease of the spinal cord.

The character of the sexual sense may also be changed and perverted. Even in healthy individuals there may be temporary peculiar desires in this respect; for example, pregnant women attempt to bite human bodies, excited men are tempted in this way by little girls. Allied to this is the morbid phenomenon in which normal intercourse is followed by the slaying of the female. The impulse to unnatural sexual gratification, which is periodically widespread among rude, and also among excessively cultured nations, is also morbid. At the present time pederasty is almost always practised either by those who are satiated with normal intercourse or have a strong hereditary tendency to nervous diseases. The latter group of cases is decidedly the larger. Public and boarding schools are generally the breeding-places of this vice. It is remarkable that there is sometimes a periodical tendency to pederasty; this is sometimes due to an epileptic basis, and forms a sort of substitute for an epileptic attack. Finally, pederasty is sometimes an early sign of paretic dementia.

There is another category described under the term contrary sexual sensations. In these there is a complete reversal of sexual desire. With the very beginning of sexual desire there is a distinct liking for persons of the same sex, those of the opposite sex producing in the patient either complete apathy or even disgust. Ordinary attempts at intercourse are not made or they prove failures; then follow romantic friendships for those persons of the same sex who disclose similar tendencies, or, at least, permit the manifestations of the perverse love. Vigorous sensual feelings and pronounced jealousy are often present. There is often a tendency to assume the

walk and dress of the opposite sex. For example, the male patients who feel themselves like women prink themselves, sway the body at the hips, and assume feminine habits and dress. They often possess all the deficiencies of woman without any of the attractive qualities of man. Others feel clearly that their impulses are opposed to reason, but despite violent struggles they remain the slaves of their passion, and sometimes end in suicide. Great forensic importance attaches to some cases in which murder, attended with mutilation and even with devouring of the body, formed a complete substitute for sexual intercourse. In some cases, sexual pleasure is produced by wounding the skin or the genitalia with a knife.

One proof of the morbid character of such impulses is their occasional periodical character. The patients usually feel the approach of the attacks, and generally make all preparations so that it can be passed through as easily as possible. In the intervals they are good husbands and fathers, and gratify their unnatural impulses only a few times in the course of a year.

Perversions of the sexual sense are also observed not infrequently at the onset of senile dementia. Here the patients find gratification in simple exposure of the person. Almost all forms of increased sexual desire may also occur in the excited stages of circular insanity and in the beginning of paralytic dementia.

A general feeling of indifference leads to weakness or even complete loss of volition. The loss of will power is especially frequent in the severe forms of congenital and acquired dementia. The desire for food excites only temporary, simple movements, and even these are sometimes entirely absent. Such patients must then be fed, and deglutition only begins after the introduction of food into the buccal cavity. But even when intelligence is relatively intact and independent of any delusions, abulia sometimes occurs in certain forms of mental disturbance, especially in conditions of exhaustion. These patients are very readily influenced, and not infrequently they are said

to be devoid of character, although a morbid condition of the brain is undeniable on careful examination.

2. *Expressive Movements.*

Impulsive and volitional movements serve as the expression of certain conditions of consciousness. Both forms of movement are not separate as regards observation, and actions, which are generally called voluntary, are, as a rule, composed of both kinds. On the other hand, volitional actions, by becoming gradually imbedded in memory, are converted into automatic movements, as is shown in the practice of all complicated movements of the body. In walking, talking, piano-playing, etc., the will has first executed every individual movement, but later it combines the most complicated movements and they become more and more automatic, until all accompanying feelings are absent and an almost mechanical process results. Hence, many acts of insane with impaired consciousness appear to be voluntary; the association of the impulse with the voluntary movements, due to the function of memory of the brain substance, is so intimate that the boundary between the two is apt to be obliterated. In addition, the accompanying feelings generally determine the strength of the involuntary and voluntary impulse in consciousness. In this struggle of impulse and conscious will the latter is often overcome; this is clearly shown in the general forms of expressive movements. They are one of the chief means of determining emotional excitement and associated psychical disorders. They are controlled in a measure by adults and healthy individuals, but children and insane, especially the feeble-minded, clearly show the condition of their consciousness. Their expressive movements are not voluntary, but follow directly the underlying affects and impulses. The pressure of the facial muscles leads to various physiognomic expressions. The character of the mental disorder is shown in the general bearing and appearance of the patient. Finally, corresponding expressions are manifested

by the timbre of the voice. In many cases these expressive movements alone permit the experienced observer to form an approximate judgment concerning the special form of disease.

The excited patient has a bold, defiant bearing, his eyes glisten, he speaks loud and rapidly, or chatters, laughs, and sings. His movements are rapid and irregular, and he has no rest. His clothing is disordered, dirty, torn. He adorns himself with flowers, feathers, bits of paper, and bright metal; he is careless of his personal cleanliness.

The depressed patient sits with a sad expression, staring in silence; or not a syllable can be got out of him, and he is obstinately mute to all questions. The anxious, excited patient walks about restlessly, wringing his hands, and moaning and crying aloud. There is great distortion of the features, and the tearful expression sometimes approaches a laughing one. In children and women, especially in hysteria, one affect may pass immediately into the other, but, as a rule, the original one is soon resumed. This is also true of the insane. Thus, the violent laughter of a cheerfully excited patient, which was attended by violent contractions of the diaphragm, is suddenly converted into spasmodic crying, and the facial expression at the same time shows the anxious condition.

When the emotional conditions have subsided, the expressive movements often assume a more distinct character. Well known are the wrinkled, suffering features of the hypochondriac; the swimming eye of the hysteric; the dignity, proud air, and arrogant tone of the patient suffering from delusions of grandeur. It must be remembered, however, that other considerations are often necessary to enable us to arrive at a conclusion. Thus, profound melancholy may lead to the same rigid and indifferent expression as advanced imbecility.

Many cases present no change of expression to superficial observation. Finally, there is no doubt that the majority of asylum patients present a certain similarity to one another in bearing, expression, and general appear-

ance, after the affective condition has run its course. As a matter of course, this is not marked in the demented, who are unmindful of their surroundings, have become callous to cold and heat, rain and wind. In them the similarity of expression is mainly due to its absence.

A peculiar expression is furnished by patients with hallucinations. One with auditory hallucinations often listens bent over forward, or he closes his ears; he often scolds and attempts to defend himself against supposed complaints. One with visual hallucinations looks fixedly into empty space, in an ecstatic or anxious manner; the patients with olfactory hallucinations play their nostrils, hawk and spit a good deal, especially as gustatory hallucinations are likewise often present. In hallucinations of feelings there are numerous gestures, the common feature of which is probably the attempt to ward off an inimical influence.

The acts of the insane, as the result of delusions, are also very manifold; mutilations and acts of violence are especally frequent.

Finally, we must again consider the disorders of speech. The language of gestures has been discussed in the preceding remarks on movements of expression, and we now turn to speech in the ordinary sense of the word. Like gestures, articulate speech has grown out of the impulse to accompany feelings and affects with movements which stand in direct relation to the feeling-producing impressions. It is true that all senses are open to external impressions, but the auditory sense in particular conveys the expression of concepts, sensations, and feelings by the production of tone gestures. But these are merely impulsive movements of expression, and speech proper only develops when the intention to communicate concepts and feelings to others is present. Language is developed from roots consisting of short syllables. An abbreviated repetition of the process is indicated in the language of children, but its form and contents are then produced by the adults around them as much as by the children themselves. In

certain forms of mental disturbance, in the retrogression of the faculties to a childish stage, we find a tendency to form new words out of simple roots. This process cannot be analyzed into its original constituents, *viz.*, impulsive and voluntary expressive movements, because the adult patient draws a great part of the new material from the store of language already at his disposal. Nevertheless, a large part of the words newly formed by the patient must be regarded from the standpoint of the original expressive movements, although there are also other conditions of development. A confirmation of the notion that the formation of such words is allied to that from speech roots is found in the circumstance that some patients employ monosyllabic new words in different senses by displacing or introducing single vowels or consonants.

Another method, and probably much more frequent, is the development of new words through hallucinations. The intimate relations between speech and hearing naturally point especially to auditory hallucinations. As an expression of the unity of thought and word, human speech, in the form of internal speaking, is felt even by the insane. He is not always able to distinguish between the morbid internal voices and the normal speech heard internally; often, however, he recognizes the former as something foreign, and as not belonging to him, although it comes from within him. The development of morbid concepts from peripheral auditory hallucinations and illusions often finds direct expression in peculiar phrases and words. If the vividness of the auditory hallucinations is not overpowering, there is sometimes a chaotic mixture of words, which, in cultured patients, may appear to form a well-defined language by the addition of syllables taken from foreign languages. Such speech is utterly devoid of meaning, but the patient often defends it with great skill. Letters and treatises may be composed in this fashion. Such language is always an indication of profound disturbance and advanced mental weakness. But it must be remembered that vivid internal hearing accompanies

the development of such fantastically formed speech. It is unnecessary to assume that the entire process is always preceded by auditory hallucinations, but in the majority of cases, the insane speech notions and the auditory hallucinations develop coincidently on the same diseased basis. When the concepts are already of a fearful character, the delusion of persecution may develop in connection with a suspiciously sounding word or noise, and these processes at once find articulate expression in phrases which sometimes exhibit a remarkable similarity in different patients. This can only be explained by the similarity of the morbid process. On the other hand, such great differences are also noted that they can only be explained by bearing in mind the individual differences in the predisposition, development, and education of the brain and its psychical functions.

The term pseudaphasic confusion has been applied to the condition in which incomplete and falsely interpreted auditory hallucinations are expressed by the patient in a mutilated or falsely understood form. The new words or incomprehensible word-structures are to be regarded as the remains of well-known utterances. This condition is also associated with other hallucinations, but at all events it is a sign of severe implication of the brain. In a certain measure it is the antithesis of the flight of ideas of excited patients in whom the confusion is merely an expression of the facilitated association of ideas, while a disturbance in the formation of words is wanting.

Echo-speech, the simple repetition of words just heard, is observed in dementia; all comprehension or volition on the part of the patient is wanting.

A peculiar disorder of speech, without hallucinations or delusions, and generally distinguished from maniacal flight of ideas by the absence of profound affects, is the endless reiteration of the same meaningless, disconnected words, in the form of a speech or sermon. This is known as verbigeration; the spasmodic element in the outbreak of the words makes the term speech-spasm appear suitable.

It would seem as if motor inhibitions must be overcome by a powerful stimulus, and on this account the expression sometimes becomes pathetic. This distinguishes verbigeration, as a rule, from the repetitions of words due to psychological causes. Verbigeration may also be observed in letters.

Finally, speech may be changed voluntarily on account of delusions. Some insane speak only in superlatives and have a few pet expressions, or there is a tendency to use only diminutives, so that the speech becomes somewhat childish. Another peculiarity is the frequent repetition of certain words, on account of the delusion that speech is being lost. Sometimes words are compounded which do not belong together.

Aphasia proper will be discussed in the section on dementia paralytica.

Writing also furnishes important signs of mental disease. In general the peculiarities of the written style correspond to those of speech, although some patients, who exhibit undoubted signs of insanity in every speech, write in a perfect, apparently normal style. It must be remembered that writing is always learned after talking. Many patients control themselves in conversation so that nothing morbid appears, but express their real ideas on paper. In writing they reveal their delusions and feelings much more readily than by word of mouth.

The form of the writing is also an important aid in diagnosis. Childish construction, awkwardness, and obscurity of expression are found in the feeble-minded; the dement writes hardly at all. The melancholic writes little; the monotony of his ideas is shown in the constant repetition of the same complaints, fears, and self-accusations. The characters themselves are small, occasionally tremulous; there is little difference between the up and down strokes, because the pressure of the pen is feeble and timid. Excited patients write a good deal, and in firm characters. The writing is done rapidly, in accordance with the accelerated flow of ideas. Finally, the hand

can no longer keep pace with the ideas, words are omitted, sentences are unfinished. A second letter is often written transversely across the first, and all the corners of the paper are utilized. The paranoiac makes special signs, and all sorts of flourishes. He underscores a good deal, makes exclamation and interrogation points without reason. At times he draws and scrawls. Sometimes he writes single words in Latin, German, and even Greek letters. These intentional changes in the writing correspond, in many cases, to its contents. Certain signs correspond to certain delusions, especially by the addition of certain terminations. Sometimes the patient attempts to write the smallest possible, almost microscopic characters. Such writings disclose their morbid origin at once, especially if they contain unintelligible drawings of machines, fabulous animals, or symbolic signs.

In dementia paralytica the writing constitutes one of the most important signs. Even before the appearance of other symptoms an uncertain, spasmodic, tremulous form of the letters may arouse the suspicion of the development of the disease. Some letters are very long, others small and obscure. Characteristic of the advancing disease is the omission of certain letters and words, or poor spelling, or repetition of single words and lines. Many erasures are made, and the second attempt is even worse than the first. The date or signature may be forgotten, while entire sentences may be copied from some book which is lying accidentally near the writer. The paper is full of blots, the letters often leave the ruled lines. The communication becomes more illegible and unintelligble as it approaches the conclusion.

In children with a neuropathic taint who have become blind or deaf-mute at an early period, and in idiots, the letters are often written with the left hand in the direction from right to left. This mirror writing is rarely done by the adult insane, probably because their long employment of the ordinary direction inhibits a tendency to the wrong method.

E. CONCOMITANT PHYSICAL SYMPTOMS.

These symptoms are often elements of the psychoses themselves, not alone because they may act as the basis of delusions and hallucinations, and are part-causes of the disease, but because they indicate the point of attack in the treatment of the disease.

The investigation of the disorders of sensibility in the insane is difficult, on account of the impairment of consciousness and the distrust of the observer. Complete absence of sensibility to pain and temperature is found in very demented individuals. This is due, as a rule, to the absence of a reception of the impressions in consciousness. The patients may be cut or burned or their limbs mutilated, without any manifestation of pain. Or the saliva drools from the mouth, flies walk about the face, etc., without an attempt on their part to prevent it. This indifference can only be understood by the absence of all attention, and cannot be regarded as a peripheral disturbance of the cutaneous nerves. This is also true of self-mutilations, such as castration, tearing out the eyeball or tongue, self-crucifixion. Religious delusions in particular enable the patient to bear incredible sufferings in silence. Peripheral anæsthesias may also occur, but they are usually only accidental concomitants of the psychosis. They may acquire great importance, however, by being converted into delusions. There is very often, at first, a tendency to describe the condition allegorically. Later, the explanation of the anæsthetic condition assumes a more positive shape, and the patient states that the affected limb is made of glass or wood. If there is very extensive diminution of sensibility, the patient's feeling of his own personality may be extinguished and he believes himself dead. If the anæsthesia is confined to certain viscera, for example, if the ingestion of food takes place without feeling, the patient believes that he has no stomach. If the anæsthesias are due to progressive organic affections of the brain, feelings of disappearance and nothingness are es-

pecially marked. Perhaps we must attribute to such anæsthesias the complaints of emptiness, pressure, band-like compression of the head, drying of the brain, air and water in the brain, etc. When the disease extends to the spinal cord, the parts supplied by the latter become involved. Anæsthesias of the muscles produce numerous symptoms. It must always be remembered, however, that psychical insensibility due to diminished attention suffices to explain such anæsthesia. Even the healthy individual will forget pain as the result of anger or excitement.

Hyperæsthesias or purely quantitative intensification of normal sensibility are not frequent in psychoses. But if the term is meant to include qualitative changes arising from the combination with psychical elements and alternation with anæsthesias, it is very frequent. The attempt to distinguish a peripheral and central origin is not very feasible, because cutaneous and muscular sensibility are chiefly involved and, as in the case of hallucinations, these are analyzed with difficulty. But experience shows that, in not a few cases, circumscribed hyperæsthesia of the skin or mucous membranes may be the cause of some special symptom in insanity. The integument is then rubbed to the raw by the patient. Similar symptoms also depend upon diseases of the cord, especially those associated with the sexual apparatus. It is, however, impossible to determine to what extent peripheral and central elements are mingled in the feelings of distressing muscular restlessness, pains in the heart, and similar conditions. In hypochondria, in particular, the symptomatology is composed of a mixture of peripheral and central hyperæsthesias. In this disease one form is often converted into the other. An originally peripheral hyperæsthesia gives rise to psychical hyperæsthesia, and this gradually becomes independent. This is shown most distinctly in neuralgias associated with menstruation, because the renewed peripheral irritation increases the psychical irritability already present, and sometimes produces a periodical recurrence of secondary delusions.

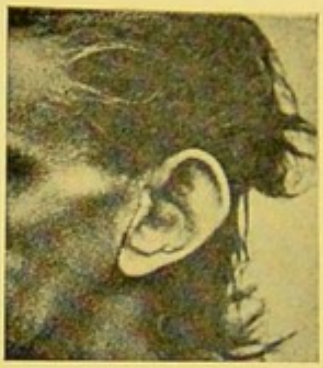
The temperature of the body undergoes numerous changes. Every excitement is attended by a rise of temperature, due in part to the production of heat attending the increased muscular movements. This elevation of temperature is marked in the most severe forms of mania, and in epileptic attacks, but it is then due, in great part, to the stimulation of certain heat centres. In motionless melancholics and dements the temperature falls, also in the exhaustion after conditions of excitement. This symptom can best be combated by constant rest in bed. It is a peculiar fact that, in the insane, a rise of temperature is sometimes absent in conditions which usually give rise to fever. For example, typhoid fever or pneumonia may run an almost apyrexial course. Other patients have a very great tendency to a rise of temperature.

Digestion shows the most notable changes among all the organic functions. It is usually impaired at the beginning of all psychoses. In melancholia gastric catarrh is shown by anorexia and a thick yellow coating on the tongue. The food is often imperfectly masticated, the bolus remains in the mouth for a long time, and, if not expectorated, finally reaches the stomach after awkward movements of deglutition. If, in addition to the psychical inattention, there is also paralysis of the muscles of deglutition, the patient swallows the wrong way, and attacks of coughing, pulmonary inflammations, or almost instant suffocation may result. The insane suffer not infrequently from spasms of deglutition which leads to temporary abstinence from food. Excited patients swallow forcibly so that they run the risk of impacting firm particles of food. If paralyses are present, even the ingestion of fluids may be dangerous. After the food has entered the stomach, it may resist digestion on account of its imperfect mastication. Diarrhœa frequently results in such cases, but, as a general thing, the insane are more apt to suffer from constipation. The excited or profoundly melancholic patient often passes an evacuation from the bowels without noticing it.

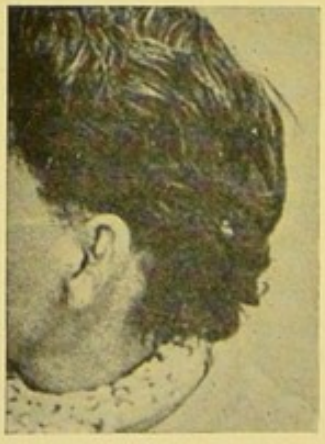
The variations in the weight of the body justify, in a measure, the assumption that, in the majority of cases, the psychoses are the expression of a general nutritive disturbance of the entire body. On the other hand, it is also possible that the disease of the brain is the immediate cause of the change in weight. As a rule progressive loss of weight accompanies the course of the disease to its climax. Remissions are attended with increased exacerbations with renewed loss of weight. This sometimes alternates regularly in the periodical and circular psychoses, but after a while, in these as in other chronic psychoses, the body adapts itself to the morbid condition, and the weight remains uniform. The weight almost always increases in rapid convalescence, and also in the transition to terminal dementia. Hence, this sign is favorable only when there are other indications of mental recovery. The greatest differences in weight develop very rapidly after puerperal psychoses, and also after protracted refusal of food.

Another series of nutritive disturbances are due to primary affections of the central nervous organs (congenital or acquired) and may be grouped together as disorders of the trophic functions. The so-called signs of degeneration are congenital and almost always hereditary. The dwarfed growth of some idiots, with the childlike appearance, and the absence of hair on the face and mons veneris belong to this category. Disturbances in the growth of the skull must often be explained by trophic influences, at all events the mechanical influences attending parturition are an insufficient explanation. Among the malformations of the skull, visible during life, we must mention a disproportion between the bones of the cranium and face, and unequal development of the two halves of the face. Further signs of degeneration (although their significance is not unquestioned) are: imperfect position, and inordinately large or small size of the ears, the absence of the lobe of the ear, and imperfect development of the concha. Greater importance attaches to irregularities in the position and development of the teeth, also to double









DESCRIPTION OF EAR PLATE.

THE two adjacent ears represent a congenital and an acquired malformation. Among the numerous congenital malformations which are described as signs of degeneration, a very frequent one is the enlargement and overlapping of the helix, known as the "handle ear."

The second picture shows a very much enlarged ear, which is drawn out smoothly in an upward direction. It was produced by pulling an innumerable number of times upon the upper rim. This movement was one of a series of imperative movements, and also resulted in notable atrophy of the ear.

Hæmatoma auris (othæmatoma) is found usually, as upon our picture, in the scaphoid fossa, between the helix and antihelix, and passes through the concha proper more or less close to the auditory foramen. It usually spares the tragus and antitragus. In our case a slight perforation of the tumor had occurred, and is recognizable by the somewhat semicircular line in the middle.

In the ear of the second picture marked shrivelling of the internal auricular cartilage gradually occurred after disappearance of the tumor. This acted toward the middle and gave rise to shortening of the affected parts in a direction radiating toward the auditory foramen.

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rows of teeth, hare-lip and fissure of the palate, a narrow vertical or excessively flat and broad palate or a unilaterally flattened palate may also be mentioned. Also deflection of the nose or the palpebral fissures. The latter are occasionally too small and adherent close to the outer rim of the cornea. Other signs of degeneration are: congenital blindness, disseminated retinitis, fissures in the iris, albinism. Other parts of the body may also be affected, but we will mention only two, *viz.*, the genital apparatus, in which the most numerous malformations are observed, and secondly, the hair on the body (beard in women, unilateral beard in men, grayness of a few locks of hair in childhood, etc.). One or more of these signs may be found in an individual, but, as a matter of course, a single one possesses little significance. Their importance depends upon the fact that they indicate hereditary predisposition.

The second group of trophic disorders develops during disease of the fully grown brain. The ear of the insane sometimes presents a tumor (othæmatoma) which has long been the subject of dispute. At first it is a circumscribed tumor of the concha, usually on the upper and outer parts; it fluctuates on palpation, and is bluish-red in color. It develops in a few days, remains unchanged for weeks and months, and disappears gradually, leaving a deformed concha. It is due to an extravasation of blood into the cartilage, which is partially ruptured. During the absorption of the blood the ear shrivels, despite thickening of the cartilage. It has been observed in rare cases in healthy individuals, without any history of injury or hereditary or acquired predisposition to insanity. But, as a rule, it must be regarded as an indication of past or threatening insanity. It generally occurs in severe and advanced stages, in which other vasomotor disorders are noticed. If such a patient is subjected to external violence on the ear (often of a trifling character) the othæmatoma develops. But both factors are necessary, *viz.*, traumatism and the trophic disorder (brittleness of the vessels).

Corresponding processes are observed very rarely in the nasal cartilages.

Another trophic disorder is brittleness of the bones, attended with disappearance of the lime salts, chiefly in the ribs and sternum. An increased amount of lime salts in the urine has also been observed. The destruction often extends to the cartilage, which is converted into a gelatinous mass. Trifling violence sometimes breaks several ribs. In one case a slight blow with a hair-brush fractured the radius in a paralytic dement. These conditions often heal rapidly at the beginning of a psychosis, but later they readily undergo suppuration.

The tendency to suppuration in vasomotor-trophic disorders affects particularly the subcutaneous cellular tissue. It happens, for example, that paralytic dements, who are kept carefully clean, will exhibit an elevation of the epidermis, due to the formation of a vesicle, upon the back, and also upon parts which are not subject to pressure. When this takes place on the back a bed-sore is apt to form in a few hours. This suppurates, and after slow exfoliation of the skin and shreds of tissue, shows how deeply the destruction has taken place. Under careful treatment recovery is possible. In other cases a phlegmonous process develops within a few days, gangrene of the cellular tissue takes place, with infiltration of pus between the muscles, febrile movement, and rapid death. A proof that such acute decubitus depends essentially on paralysis and fragility of the vessels, and that trauma is only an exciting cause, is found in the fact that it occurs also in paralytic dements who are not paralyzed, but are constantly running about and lie down only for a few moments. Like othæmatoma, acute decubitus is an evidence of an incurable psychosis.

The secretion of tears, like other secretions, is often very slight in cases of melancholia. It is only in beginning recovery after profound melancholy that tears again appear, and they then exercise a soothing effect. When

there is a rapid change of mood in feeble-minded patients, tears are apt to come and go.

In all depressed conditions the secretion of saliva appears to be diminished. Whether an increase constantly accompanies conditions of excitement is not certain, but, at all events, this happens occasionally. The secretion may be the result of increased movements of the mouth, as in constant speaking, or the saliva may be secreted voluntarily, in order to be smeared on walls, anointed upon the body, etc. Some perfectly quiet demented patients expectorate freely in a skilful manner, others employ it as a convenient means of defence against annoying approach. Sometimes the patients expectorate enormous quantities, especially when gustatory and olfactory hallucinations lead them to cast out, with the saliva, poisonous elements from the body. When stuporous patients, with the body bent over forward, allow saliva to run out of the angles of the mouth, so that their clothes are constantly wet, this ptyalism is not necessarily due to morbid increase of saliva. The normal amount of saliva secreted is very large, and in individual cases it is difficult to determine whether it is really excessive.

Although examination of the urine is difficult in the insane, certain changes appear to be found regularly in psychical disturbances. In all conditions of depression the amount of urine is very slight, and *vice versa* in conditions of excitement. In some hysterical cases there is almost complete suppression. As a general thing the amount of phosphates is diminished, but cases have also been reported in which they were present in excess. In periodical mania sugar has been found occasionally in the urine, but in some of these cases slight diabetes was also present between the attacks. Albumin, occasionally even a few casts and blood-cells, have been found in the various forms of spasmodic attacks observed in the insane.

IV.

THE COURSE OF MENTAL DISORDERS.

A. COURSE, DURATION, AND TERMINATIONS.

THE boundary between disease and health is not sharply defined, so that we are not always able to tell when the physiological limits are exceeded. The observation of a large number of individuals furnishes us with average types, but even among these there are certain psychical conditions of healthy life which are subject to great alternations and yet do not constitute the forerunners of morbid processes.

We may distinguish between morbid conditions and processes. The former are not always terminal states of diseases which have run their course, but may also be congenital. They are permanent, while morbid processes exhibit a progressive tendency. This difference is sometimes obliterated by the fact that the mental disorder runs a very slow course, and thus simulates a morbid condition. Healthy psychical life also has a slow development; hence, the process of life itself may bring with it the morbid process; this special process is known as degeneration.

The beginning of the disease, whether it develops out of an already existing congenital condition or out of complete health, is difficult to determine, especially on account of the usually slow development of the disease. It is almost exclusively in cases with an hereditary taint that the symptoms sometimes break out with sudden violence. But, as a rule, the disease begins gradually and is attended with prodromata.

The first changes occur mainly in the finer movements of emotional life, in morals and character. The tastes,

habits, and desires of the patients change; they are in an excited or depressed, often in a changeable or irritable mood. They suffer from an indefinable feeling of illness. This gradually increases, the patient becomes timid and has a presentiment of the impending loss of reason. There may also be sudden attacks of desperation, and at times a tendency to suicide. The facial expression and the gestures undergo a change. There is an irresistible tendency to movement, to wander restlessly to and fro, without finding rest or comfort; or they complain and exaggerate their sufferings. They complain that their ideas have disappeared, that they will never be well, and that death is inevitable. Others complain of the loss of memory, their ideas are concentrated more and more upon their own ailment, and excessive egoism develops. For weeks, months, and even years these prodromata, in the shape of absent-mindedness, indifference, or striking activity, may precede the outbreak of the disease proper. At a later period physical disorders are added to these mental phenomena. Among the most important is disturbed sleep and frightful dreams. Headache and dizziness are often distressing symptoms. The appetite is lost, digestion becomes impaired, obstinate constipation develops, and often there is a sudden rapid emaciation. The observation of these prodromata is of the greatest importance, because their treatment offers the possibility of preventing the psychosis. As a rule, the observations of the patient's family concerning the period at which these changes begin are entirely unreliable. The most striking symptom to the laity is the gradual change in the character. Later prodromata may consist of a feeling of delayed and impeded thought and imperative notions. The special character of the psychosis can rarely be predicted from the prodromata, although the subsequent condition of depression or exaltation often has its corresponding precursors.

When the severe organic forms of insanity, particularly dementia paralytica, develop, the prodromata often have

a different character. There are early signs of mental weakness; mental exhaustion soon occurs, the lapses of memory are very striking. The reception of new impressions is slow; there is diminution or even complete loss of the ethical feelings. On account of the transgression of criminal laws, the eyes of the family are often opened earlier in these cases, especially when the patient's circumstances do not explain his thefts, wastefulness, or sexual offences. Finally, the suspicion becomes confirmed when motor disorders develop, especially in speech and the facial muscles. In some who are about to become paralytic dements there is occasionally a great increase in mental activity without other disturbance or weakness of the mental functions. They are enterprising and manifest abilities which they had not possessed before, and act in an entirely different manner from their previous habits. This change of character is more striking than in the prodromal stage of other conditions of excitement.

The onset of the mental disorder proper is either gradual or sudden. The majority of those forms which run a rapid course, such as febrile and postfebrile psychoses, insanity of parturient and puerperal women, and insanity after violent emotions, injuries to the skull, attempts at hanging, and carbonic-oxide poisoning, have a sudden onset. They also run a rapid course, attended with violent symptoms. These psychoses are also characterized by the sudden cessation of the attack, with immediate restoration of the former mental condition. Such conditions have been described as transitory insanity. A characteristic feature is the profound disturbance of consciousness during the entire attack, with subsequent marked hiatus of memory. This, like the other severe irritative symptoms (hallucinations, fear, psychomotor irritative processes), depend upon circulatory changes. Some of these cases may even run their course in a few hours, and then, as a rule, terminate in recovery after a deep sleep, followed by a complete hiatus of memory concerning the attack. They offer a favorable prognosis, inasmuch as they usually recover

rapidly and completely. This is also true of pathological affective conditions and alcoholic excesses.

The slowly developing psychoses often run a slow course, attended by the development of delusions and hallucinations. After they have reached their culminating point, they may remain in that state for a long time. But, as a rule, there is soon a diminution in the severity of the symptoms, or even a remission or intermission. These changes are especially marked so long as the disorder is still attended by affects. It is a matter of practical importance that such remissions usually follow a change of surroundings or locality, but are soon followed by a fresh exacerbation. When the symptoms disappear entirely during the intervals, we speak of lucid intervals.

Many external influences may give rise to remissions during chronic psychoses. The symptoms are sometimes intensified in spring and improved in autumn. Excessive heat and cold may act in a similar way.

The remissions are sometimes so complete that they may deceive us concerning the duration of the disease. At such times many chronic patients possess so much self-control as to conceal their delusions entirely. Some maniacs cease to talk irrationally so that we might look for recovery, did not their indifference to outside interests, the lack of sleep and of other favorable bodily conditions, show that recovery was still remote. Certain melancholics may conceal their insanity and their impulse to commit suicide until the very day on which they reach their end.

These remissions may last from a few hours to several years. The remissions are more prolonged the more chronic the mental disorder, and the less the hopes of complete recovery. Lucid intervals may last days, weeks, or months.

There is also an important class of psychoses in which a regular alternation of morbid and comparatively healthy conditions is typical and characteristic (periodical psychoses). The different periods may last days, weeks, months, or even a number of years, but even in the intervals the

patients may not be regarded as mentally sound. This class is subdivided into two groups, *viz.*, periodical psychoses proper, and cyclical or circular psychoses. In the latter a period of depression alternates, according to certain rules, with one of exaltation. This alternation is usually indicated even during childhood, and the patients almost always suffer from hereditary taint or their mental condition is below the average on account of general impairment of the entire constitution. The completely developed symptoms are generally seen only in asylums, and it is then found that the periodical course is due to causes developing within the body, not to external agencies. Here, where the symptoms are not changed by external circumstances, the different periods are found to resemble one another completely. This is particularly marked at the beginning of periodical conditions of excitement. These conditions offer an unfavorable prognosis, inasmuch as they usually persist during life. A long, lucid interval, or a prolonged, only slightly depressed period, not infrequently simulates recovery, and at such times the patient may be perfectly responsible. As the return of these conditions is due to internal processes, we should not speak of relapses, but should reserve this term for those forms of insanity in which the new disease is the result of fresh external causes. The psychoses due to alcoholism are illustrations of true relapses.

While the different periodical psychoses may vary greatly in duration, yet in a still larger number of cases their duration is similar. In very rare cases the exact similarity leads to the suspicion of infectious causes, such as malaria. Indeed, in some cases a previous intermittent fever impresses its periodicity upon subsequent attacks, and such alternating psychoses exhibit, for a time, a tertian or quartan type. Their subsequent course, however, does not exhibit the original type.

After the disease has developed it rarely remains at the same height. This is true, for example, of the not frequent forms of so-called constitutional affective insanity which oc-

cur in females and sometimes in a periodical form. In periodical psychoses, but especially in simple mental disorders which do not recover, and in several organic psychoses, there is much more often an increase, either uniform or by fits and starts, of the symptoms, with a tendency to mental weakness. In a certain measure it is true that when, after a primary depressed mood, prolonged excitement dominates the scene, mental weakness will finally develop into dementia.

The course of the disease is rarely effaced by the fact that it becomes complicated with other forms of insanity. We do not refer to the varying forms of the periodical psychoses, but to the coincident occurrence of several forms of disease, such as, for example, melancholia with a former congenital weak-mindedness, menstrual insanity or dementia paralytica with paranoia, alcoholic insanity with simple psychical disorders.

Changes for the better or worse are found most frequently during the subsidence of curable psychoses. Convalescence is sometimes accelerated by a severe fever, such as typhoid fever. Otherwise, as a rule, the signs of emotional excitement are first lost; and evidences of awakening interest in the outer world become manifest. At first this improvement may last only a few hours or days, and bad days alternate with good ones, until a final advance is made to complete recovery. Even after the intellectual disorder has entirely disappeared, the emotional equilibrium remains unstable for a long time. The former healthy personality becomes more distinct; if delusions or hallucinations make their appearance, they are recognized as such. Facial expression, speech, and external appearance remind us of the normal condition, sleep and appetite are restored, and with the knowledge of the morbid character of the former acts the transition to complete recovery is indicated.

Certain transitory forms of insanity last only a few hours or days. The majority of simple psychical disorders which recover last at least a few weeks, and gener-

ally several months. When the causes of the development of the disease reside within the patient's own body, it is more apt to last for life. A duration of several years is not very rare and does not exclude the possibility of recovery.

Recovery is sometimes attended by the restoration of certain bodily functions, such as perspiration, salivation, weeping, menstruation, which had been checked during the disease. In rare cases a favorable influence is exerted by local inflammations, such as abscesses, boils, parotitis, pneumonia, infectious diseases.

Every psychosis which does not improve, passes into a chronic stage. The impairment of the mental activities and the diminution of the violent symptoms are attended with the return of quiet sleep, good digestion, and increasing weight of the body. The patient becomes more indifferent to those around him. This condition may be temporary and may tend to recovery if it is the result of mental exhaustion. But if the return of the former psychical personality does not go hand in hand with the bodily improvement, then recovery is improbable.

The term incomplete recovery or improvement is employed when the remains of the disease, which has just run its course, are more distinct than secondary or acquired feeble-mindedness. Such patients may live quietly in an asylum, and an attempt to discharge them often fails because the unusual requirements in the life of the outer world rapidly overthrow their equilibrium. But much depends upon circumstances. If his home is a happy one, his pecuniary circumstances good, and his position in life assured, the patient may, perhaps, return home and fill his place in a tolerably satisfactory manner. But even in the apparently mildest forms of acquired feeble-mindedness we always notice a certain weakness of memory and impaired mobility of the emotions. Uncleanliness in person and dress is apparent; conduct which is devoid of tact, irritability, and unbridled yielding to violent affects are striking.

There are gradual transitions from these conditions to complete dementia. The patient long retains the memory of past times, longest of the mechanical skill which he has previously acquired. He can play music, work at his trade, play cards or even chess; later everything disappears.

Simple forms of insanity do not prevent long life. But, in general, the mortality of the insane is considerably higher than that of the mentally sound population. The insane also possess a greater predisposition to certain bodily diseases. This is due to the fact that the mental disorder gives rise to irregularities in nutrition, general anæmia, lack of sensitiveness to injurious external influences and to exposure to colds. Overcrowding of asylums causes further injurious factors, especially as regards epidemics. The frequency of tuberculosis must be attributed to living in crowded apartments, and to this cause the mortality in great part is due. Another cause is the difficulty of early recognition of intercurrent diseases, on account of the disturbance of consciousness and the frequent absence of manifestations of pain.

Among the individual causes of death, the mental disease itself must first be considered. The connection is most distinct in dementia paralytica and its underlying diffuse, chronic disease of the cerebral cortex. The progressive paralysis of the central nervous organs proves fatal by the paralytic attacks, decubitus, severe injuries, etc. Feeble heart's action and imperfect respiration permit the development of pneumonia, as in paralytic dements and other chronic insane, and this cause of death is about as frequent as tuberculosis. Anæmic and marantic patients are most apt to succumb to pneumonia associated with hypostasis. In such cases the central paralyses of the vasomotor system usually lead to a rapid fatal termination. Demented patients suffer from chronic intestinal catarrh, due to the ingestion of straw, wood, stones, etc., and this induces rapid loss of vital energy. Uncleanliness aids the development of furunculosis after slight injuries,

and this is followed not infrequently by erysipelas. Finally, numerous surgical affections result from self-mutilation or injury by others, and may be the cause of death on account of the impossibility of proper treatment. The brittleness of the bones is a predisposing factor in many cases, especially in dementia paralytica. There is marked disappearance of lime salts, especially in the ribs. Slight blows cause fracture of the ribs, and not infrequently this gives rise to pleurisy. The tendency to suicide has numerous victims, especially outside of asylums. Obstinate refusal to take food is generally associated with gastric catarrh and may terminate in death after extreme exhaustion.

B. GENERAL PROGNOSIS.

The prognosis as regards life often depends more upon the existence of other bodily diseases than on the condition of the brain affection. We have seen that, on the whole, insanity diminishes the power of resistance to febrile diseases. Further, primary nutritive disorders of the brain have a tendency to produce permanent tissue changes in the brain and meninges. Certain forms of insanity are characterized by immediate inflammation of the cortex. Of these the most dangerous is dementia paralytica, which proves fatal in one to three years, often in a shorter period. An unfavorable prognosis attaches to the conditions of excitement which are due to severe congestion of the brain. The cortex may soften rapidly in some layers or a hemorrhage may prove rapidly fatal. Persistent motor restlessness and insomnia increase the danger of sudden collapse, and rapid œdema of the brain may also develop under such circumstances. The more violent the cause and the more recent the disease, the greater is the danger to life; as a matter of course, old and feeble persons succumb most readily. Persistent refusal to take food and attempts at suicide are most frequent in recent melancholic conditions. Hence, the danger of a fatal termination is much greater at the beginning of the disease in a recent

mania or melancholia. After the affect has subsided and mental weakness sets in, the mortality falls considerably.

The prognosis as regards recovery from insanity requires much greater psychiatric knowledge. Milder degrees of mental disorder often do not come under the physician's notice, and run a favorable course in the family circle. According to asylum statistics recent cases have a much more favorable prognosis than older ones. The most frequent recoveries (up to sixty per cent) are obtained in the first month of the disease, about twenty per cent in the second half of the first year, and at the most twenty-five per cent in the second year. After the disease has lasted many years, recovery occurs in very rare cases.

Periodical attacks with long free intervals are unfavorable as regards complete recovery, but will probably improve very materially. At first these patients enter the asylums once every year, every three years, or even every seven years, but in time the attacks become more prolonged and the free intervals shorter. In the continued cases a slow, gradual development usually indicates a prolonged course and difficult curability; a sudden outbreak is more favorable as regards recovery. Sudden recoveries after prolonged duration of the disease are suspicious, and slowly advancing recoveries are usually more permanent. Irregular changes in violent symptoms are more favorable than long persistence in the same course. The distinct advance of severe symptoms and the development of systematized delusions have a very unfavorable prognostic significance. Especially grave in this respect are protracted conditions of sexual excitement, which end usually in dementia.

It is a favorable sign in violent mania when there is not alone a temporary diminution of the excitement, but a change to a depressed mood. Such changes often lead rapidly to the normal condition. The prognosis is favorable in all cases when, with beginning quiet and clearness, the former likes and pleasures make their appearance,

when the feeling for propriety of conduct returns, and the love for the family is restored.

The most important sign of real recovery is the decided recognition of the disease as such by the patient. Caution must be exercised, however, in two directions. In the first place there is a possibility of intentional deception, and in the second place there may be a recognition of the morbid character of the mental disorder in a patient although recovery is not to be looked for. Hence, the value of this sign in prognosis resides in the fact that its absence excludes complete recovery, while its occurrence after the subsidence of violent symptoms usually has a very favorable significance, although it only justifies a prediction of probable recovery. In mental weakness this symptom sometimes develops at a later period. As a rule, it is difficult for the convalescent to form a correct judgment concerning hallucinations, especially the slight impulse to movement which attends so many auditory hallucinations. When the morbid character of the disease has been recognized, the patient also tolerates mention of the occurrences which have happened during his illness. Whoever carefully avoids such memories is probably not yet normal, but has merely become sufficiently quiet to conceal his delusions. It is only when the patient recognizes the pathological changes in his mental life as something strange, that he is able to express thankfulness for his recovery.

With advancing recovery, sometimes even before the mental improvement, bodily improvement also takes place. The weight increases, appetite and sleep improve. Another favorable sign is the return of former ailments which had disappeared during the insanity, *viz.*, nervous headaches, digestive disturbances, etc. But if complete bodily health develops during protracted insanity, the prognosis is very unfavorable, and the transition into imbecility is probable. Such patients may become extremely obese. Slight increase of weight, however, is not an unfavorable sign.

There is a difference, as regards prognosis, between hereditary psychoses, whose outbreak is due to late accidental causes, and those in which heredity has produced a morbid development of character from early childhood. If the patient with hereditary taint has been mentally normal until his attack of insanity, the prognosis of the single attack is more favorable than in non-hereditary cases, but there is a greater predisposition to relapses.

An unfavorable prognosis usually attaches to those acquired forms of insanity which develop after injuries to the head, insolation, apoplexy, meningitis, and particularly after epilepsy.

In syphilitic insanity due to specific changes in the brain, great success is sometimes attained temporarily by inunction treatment. But such cases are exceptional, and the majority terminate, at the best, in feeble-mindedness.

When general anæmia, menstrual disorders, curable diseases of the genitalia, and mild inflammations of the intestinal canal are the cause of insanity, the prognosis is favorable. This is also true of insanity after febrile diseases so long as it is the expression of anæmia or exhaustion of the brain, while complication with severe diseases of the brain or with a serious infection or intoxication makes the prognosis poorer.

The prognosis is unfavorable in old topers; here the insanity is usually attended with severe inflammations of the meninges and even the cortex. In moderate alcoholism many cases of insanity appear to have a favorable prognosis, but they exhibit an unusual tendency to relapses.

Temporary or violently acting causes permit a more favorable prognosis than slowly acting causes which last for years. Thus, in continued sexual excitement recovery is rare, while masturbators who abandon their vice may be entirely restored. An extremely unfavorable prognosis obtains, however, in those cases in which the delusion of a close union with the supernatural is associated in an obscene manner with the tendency to masturbation.

Temporary causes which act only once, such as pregnancy, the puerperal condition, and nursing, allow a very favorable prognosis.

It is on account of this latter group of cases that the prognosis as regards curability in general is better in females, while drunkenness and the injurious influences attending the struggle for life still further aggravate the prognosis in males.

The significance of age in prognosis is easily understood. Childhood is greatly endangered by the so frequent hereditary taint; in youth the prognosis of insanity is much more favorable than in advanced age. Puberty and the climacteric furnish a favorable prognosis only when there is no hereditary taint.

We will now consider the prognosis of a few individual symptoms. A profound disturbance of consciousness, developing gradually in the course of the disease, indicates an unfavorable termination, while its sudden occurrence is more favorable. The impulse to collect articles, loss of the sense of modesty, and uncleanliness during violent mania, are not so grave as in chronic conditions with extinguished affects. Incoherency and firm delusions during excitement may disappear; without excitement they are usually signs of mental weakness. Permanent impairment of memory has an evil significance. If confusion is accompanied by new-formed words the prognosis is bad.

Insensibility to heat and cold, staring into the bright sunlight, absence of the feeling of satiety, the ingestion of nauseous articles, especially of excrement, are found almost exclusively in severe, unfavorable cases. Conditions of sexual excitement before and after the period of potency are of grave omen, especially the rekindling of sexual desire in old men.

Visual hallucinations usually occur only in recent cases, auditory hallucinations in chronic ones, and the latter, like olfactory hallucinations, are grave signs. Still more unfavorable is the combination of hallucinations in several sensory tracts.

Actions which are done apparently without motive and which are subsequently defended with various reasons have a very bad significance. Like crankiness, they point to degeneration-insanity. Imperative concepts, movements, and impulsive imperative acts are also symptoms of the same morbid group; or they indicate profound organic destruction of the tissues, as in the rhythmical and stereotyped imperative movements of imbeciles.

Among the purely bodily disturbances the motor symptoms are most important as regards prognosis. Paralyses, spasms, and disorders of co-ordination as attendants of psychoses are usually due to severe diseases of the central nervous system, unless they are hysterical in character. Catalepsy associated with disturbance of consciousness also occurs in curable cases, and muscular tremor is not always an unfavorable sign; for example, in the beginning of alcoholism, anæmia, and nervous excitement; but if associated with paralyses of the limbs or ocular muscles it is more serious. Difference in the size of the pupils and strabismus, if not habitual, can only be utilized in association with other symptoms. Rigidity and contraction of the pupils rouse the suspicion of progressive paresis. Disturbances of speech, so-called syllabic stuttering, and the corresponding disorders of writing point to the same unfavorable form of disease, but may also occur in general neurasthenia. Continued gritting of the teeth is an indication of severe irritation of the cerebral cortex. Continued flow of saliva hardly ever occurs except in higher grades of mental weakness; at the same time there are usually pronounced changes of mimic innervation. An unfavorable termination is often revealed at an early period by the staring, expressionless gaze, and the distortion of the features due to unequal innervation. If the features and posture are relaxed, the chin depressed, the saliva flowing from the angles of the mouth, and the fæces and urine are passed involuntarily, then the transition into imbecility has generally taken place. On the other hand, recovery is early manifested

when the features clear up, and the normal play of features of the former personality again develops.

Neuralgias have no significance in prognosis, while anæsthesia and analgesia are decidedly unfavorable. The severe trophic disorders, such as othæmatoma and fragility of the ribs, almost always indicate a termination in death or dementia.

The absence of the menses in recent cases is not unusual, but their return is always a desirable sign. If menstruation returns before improvement of the mental condition, it indicates at least an improvement in the vegetative conditions of the organism, and is occasionally the precursor of recovery; but if improvement does not occur soon, then the return of menstruation, like that of other bodily functions, without mental improvement, has an unfavorable prognostic significance.

V.

THE DIAGNOSIS OF MENTAL DISORDERS AND THEIR BORDER LINES.

A. GENERAL STANDPOINT.

A PSYCHIATRIC diagnosis is in the main a psychological one. But although the psychoses are diseases which run their course particularly in the psychical domain, yet the accompanying bodily symptoms may not be neglected. Definite diagnoses are based less upon single, undeniable manifestations of disease than upon definite groups of phenomena. Everything depends upon the interpretation of the mental acts by the observer. For example, in the uneducated a belief in witches cannot at once be regarded as an evidence of disease, while such a belief in a cultured individual forces us to investigate the reasons which have led him to this belief.

More or less difficulties in diagnosis are created by the families of the patients, who, to a greater or less extent, acquire the habit of accepting his delusions as real. They attribute the disease to entirely immaterial causes; they weaken the significance of the patient's wrong acts or justify them. If the patient has attacked a passer-by, they explain that the former must have been irritated. On the other hand, the patient himself offers serious difficulties. Usually there is distrust of the physician, because the patient's feeling of uncertainty concerning his own mental functions makes him fear removal to an asylum. Hence, he refuses to proclaim his delusions, and is either silent or gives unsatisfactory answers. It is only in exceptional cases that patients, with a certain consciousness of their own illness, voluntarily lay bare their internal condition to the physician.

The existence of a psychosis may not be denied on account of the incomplete resemblance of the case to one of the principal forms of insanity, because there are various mixed forms or incompletely developed varieties of insanity. As a rule, it is not difficult to discover at least the general signs of excitement, depression, or mental weakness, although even this is not always patent. In such cases the patient's acts furnish better information.

The chief evidence of the existence of a psychosis is a change in the character of the psychical life, in the patient's moods, feelings, tendencies, habits, volitions, and judgments. Hence, his previous character must be known to the physician or must be described to him by others. In some cases, however, there is merely a higher development or intensification of the prominent characteristics. The change is also indistinct in congenital conditions.

The diagnosis of mental disturbance in children presents special peculiarities. For example, it is not always easy to determine, at an early period, slight degrees of feeble-mindedness. A late acquisition of speech is usually noticed even by the parents, also the rapidity with which study tires the child. It is especially important to distinguish congenital or early deaf-mutism from imbecility. In the latter condition the child is dull and apathetic, and looks aimlessly about him; in the former, he looks with an attentive expression upon the speaker. Tests of hearing then give further information.

A complete diagnosis includes a knowledge of the causation of the disease. The patient's previous life must be investigated in all directions in order to understand the development and course of the disease. In this way we will avoid the error of making a diagnosis of a definite form of disease from a single symptom, inasmuch as there are no so-called pathognomonic symptoms.

B. PSYCHIATRIC EXAMINATION.

1. *Diagnosis of the Disease.*

The examination is begun in a somewhat similar manner to that employed in any other disease. The name, age, and occupation are first obtained. This will determine, in a rough way, whether consciousness is impaired or unclouded, whether memory is retained, or the course of ideas is accelerated or retarded. The bodily posture, gestures, and facial expression will then furnish sufficient data to enable us to continue the examination in certain directions. In excited patients the further course of the examination will be guided by the manifestations of disease themselves, in self-contained individuals we reach further facts and observations by questions concerning the events of their former life, while completely irrational patients soon compel us to regard the present condition, which is then made clearer by the statements of the family. As a general thing, however, we should allow the impression made by the patient to act upon us in as unbiassed a manner as possible, and to gain his confidence by dilating quietly upon his present notions. Excessive questioning, at the start, is apt to intimidate the patient or to produce distrust. Gradually we may enlarge upon the symptoms which are exhibited voluntarily.

Among these the expression of the mood is almost always the first. In recent cases, as a rule, affects appear very clearly. The cheerful mood is disclosed freely, and there is no objection in calling the patient's attention at once to the fact that there is no reason for mirth in his present position. He will either pay no attention to this reprimand or he is not infrequently led to disclose, in rapid speech, his inner feelings. In this event we attempt to ascertain disorders in the course of his ideas, which are rapidly shown in the higher grades of cheerful excitement, but require careful observation in the slighter grades. A certain degree of loquacity and jumping from one subject of conversation to another are important signs in the diag-

nosis of a condition of excitement. Great aid is furnished by observing the movements of expression. While cheerful excitement presents a frequent change of expression, in depressed moods our attention can be directed for a longer time to their external signs. The melancholic thus furnishes an excuse for asking him concerning the reason of his depression, but if his despair is known to be unfounded we should avoid calling his attention thereto in order that distrust may not be aroused. A friendly, sympathetic manner is necessary if we wish to ascertain whether the melancholic affect results from delusions and hallucinations, or whether there is a simple affective condition. To the existence of these two conditions, *viz.*, delusions and hallucinations, the examination must now be directed unless the patient himself has already revealed them.

Delusions are very characteristic of certain psychoses. In the beginning of the disease the patient, in many cases, instinctively attempts to conceal them, and eludes all attempts to discover them until some point is touched which throws him into an affect, or until, by means of all sorts of questions, a point of contact is found through which the entire chain of morbid ideas may be developed, apparently without intention. The conduct of the patient sometimes puts us on the trail. A distrustful bearing rouses the suspicion of the notion of secret enemies and persecutions. Excessive self-satisfaction, which is often exhibited in the dress, indicates ideas of grandeur, while frequent prayers and tearful expression make it probable that we have to deal with the delusion of having committed a crime, with a religious color. Not every statement of a peculiar character must be regarded as a delusion, because the insane, like the sane, may be mistaken, or the idea of jealousy, for example, may be based on fact. Thus, so far as regards its contents, the delusion of jealousy of the alcoholic cannot be distinguished from a possible mistake. But more frequently the delusions are so peculiar that their morbid character strikes us at once.

The contents of delusions may be built up from the entire experience of man, yet the main elements of delusions exhibit such a widespread agreement with one another that the experienced observer, relying upon inferences drawn from external appearances, is often able, with surprising rapidity, to obtain from the astonished patient the confession of his morbid ideas. It is a notable fact that the same morbid ideas appear in so many patients. In the individual cases the principal groups of delusions (which have already been discussed) are easily recognized as variations of the same theme, and the diagnosis will quickly distinguish depressive notions of self-impairment or expansive ideas of grandeur. There is no material difference, so far as regards the medical diagnosis, whether a mother says that she or her children are poisoned. If a patient revels in ideas of great wealth it is immaterial, so far as regards our interpretation of his statements as delusions, whether the treasures consist of mountains of gold or more modest sums. These differences possess value in diagnosis only in so far as they are evidences of absence of judgment and thus become a measure of the degree of mental weakness which in a greater or less degree accompanies all delusions.

In a series of cases depressive and expansive delusions are both present. They may appear in rapid alternation, but even then one group is the more prominent. A maniacal patient may say, in the same breath: I have been poisoned, I am the king; a paralytic dement, with the most florid delusions of grandeur, may say that he will be killed to-day; or a profoundly melancholic patient may casually remark that he lives in a palace, surrounded by princes. Such brief expressions of opposite moods are not rare in recent affective conditions, and do not compel the diagnosis of an unfavorable form of disease. But if the two principal groups of delusions develop slowly alongside of one another, so that, for example, the antagonistic notions of delusions of grandeur and of persecution have had time, during a number of years, to form firm

combinations and to grow together into a firm system, then we have to deal with a more serious ailment, with "verruecktheit" in the proper sense of the word.

We must next ascertain whether the delusions are accompanied by hallucinations, and which have developed first in point of time. As the latter do not develop on the same basis, in so far as they are peripheral in origin, this must first be examined, because certain peripheral hallucinations are susceptible of direct treatment. If the hallucinations have developed centrally in the cortex, it will probably be impossible to determine the period of their development. Their relationship and similarity of development are then so great that in many cases hallucinations may only be regarded as delusions which are provided with a vivid sensory accompaniment. In this respect we may refer to all those relations which may be recognized between auditory hallucinations and their expression in speech. The firm association between concept and language makes it easy for us to understand the powerful convincing power of auditory hallucinations which readily overcomes the critical objections of reason. It must be borne in mind that the basis is cerebral and not merely logical. Hence delusions, like hallucinations, may also appear in antagonism to the predominant moods and feelings.

As a regular connection between certain sensations (associated sensations) takes place along definite nerve tracts, in like manner we must assume the development of certain delusions and hallucinations as connected with definite tracts, so that they must always develop in the same manner after certain peripheral or cerebral stimuli (associated concepts). In this way alone can we explain, in a measure, the narrow range and repetition of the contents of primordial delirium, which are found on the whole to be independent of the mood and of the special form of disease.

The search for hallucinations is often facilitated by the patient's manner. A listening attitude, staring at one

point, sudden starting and speaking are occasionally very characteristic. The diagnosis is easier when the patient speaks of "voices" and "images." The simple mention of electrical or magnetic influences, etc., if made casually, sometimes induces the individual to express his secret thoughts.

Peculiarities in the surroundings, for example, in the furniture of the room, may also guide the diagnosis. After a few questions to test the memory, we must endeavor to obtain from the patient (or those around him) a history of his previous condition. It is of great practical importance to question the patient and his family separately. We must particularly avoid unreserved acceptance of the statements of the family, especially as they are inclined to regard signs of the already existing disease (for example, excesses of all kinds) as causes of the mental disorder.

The hereditary conditions must first be ascertained—the existence of insanity in the relatives, the special form of the disease, the occurrence of nervous diseases of all kinds, of drunkennesss, or a tendency to suicide. Under certain circumstances we must inquire into the question of hereditary syphilis or tuberculosis, or whether conception took place during drunkenness or the epileptic condition.

We proceed next to the history of the development and growth of the patient—whether injurious influences were at work during pregnancy or parturition, whether the development of the brain was impaired by diseases of infancy; whether convulsions appeared at a later period. We then enter upon the peculiarities of the further bodily development, especially sexual development and masturbation, the timely or premature occurrence of puberty and menstruation. The questions next extend to the time at which the patient learned to speak, the progress in school, social tendencies, and the peculiarities of character. With regard to later life we must ascertain the occurrence of exhausting diseases which lead to anæmia.

The investigation then passes to the patient's occupation, his marital and social relations, etc.

Special importance attaches to the disappearance of ethical feelings, of love for the family, defective sense of propriety, the æsthetic feelings in general.

We must also ascertain whether the disease began suddenly or slowly, whether disturbances of consciousness occurred at the onset or later, whether the disorder was continuous or progressed by fits and starts. The previous history often justifies renewed examination of the present mental condition and this may facilitate the correct diagnosis.

Physical examination of the body must now be undertaken. The most important point is the character of the sleep, then the general nutrition, adipose development, muscular strength, and weight of the body.

Examination of the bodily temperature often requires special care, because the other diagnostic aids in the recognition of bodily diseases are often wanting in the insane.

The vasomotor system is almost always implicated. This is shown most distinctly in paralyses of large vascular tracts or in more or less circumscribed tracts, the walls of whose vessels offer a diminished resistance to the current of blood. The experienced touch easily recognizes the pulsus tardus of many insane.

Physical examination of the lungs must not be neglected, because pulmonary diseases in the insane occasionally run their course without a rise of temperature.

As a matter of course, the condition of the digestive organs merits special consideration. In recent cases of melancholia gastric catarrh is sometimes the exciting cause of concepts from which the refusal to take food develops.

As regards gynecological examinations, it is better to do too little than too much, and they should be made only when there is a definite indication. It is advisable to make such examinations only in the presence of witnesses.

Examination of the urine is desirable, and, whenever

there is marked emaciation, the tests for sugar should be applied.

Ophthalmoscopic examination is necessary, because congestion of the brain and the fundus often go hand in hand. Retinal diseases, especially retinitis pigmentosa, and opacities of the refracting media may help to explain visual hallucinations.

Examination of the ear is equally important. The removal of hardened wax has often relieved auditory hallucinations. Plugging the ear with cotton sometimes leads to the suspicion of auditory hallucinations which were, perhaps, not apparent from the manner and conversation of the patient. Inflammations of the middle ear sometimes lead to the recognition of purulent meningitis and thrombosis of the sinuses, whose occasional connection with psychoses has been observed.

When olfactory hallucinations are present the nose should be examined.

The tests for cutaneous sensibility must be accepted with great reserve. The examination of motility is very important because motor disorders, when associated with insanity, are usually the expression of severe diseases of the brain. The combination of psychoses with focal diseases of the brain and external injuries may also give rise to numerous motor symptoms. The significance of such symptoms should not be overestimated in severe cases of alcoholism. The further course and the previous history will generally prevent a mistake with the usually more persistent but similar disorders of paralytic dementia. On the other hand, the changeableness of some paralyses does not exclude severe cerebral disease. In dementia paralytica, for example, the paralyses sometimes change their locality or disappear for a time in a few hours or days; differences in the size of the pupils may pass from one side to the other. Phenomena of this kind are also observed in some other forms of insanity. Mistakes are only avoided by taking into consideration all the other symptoms of the case. It may here be mentioned that

very wide pupils, with good reaction to light and accommodation, are found often in hysteria and mania, while this symptom is wanting in epileptic attacks, meningitis, and increased cerebral pressure in general. The mobility of contracted pupils is ascertained with difficulty, but pronounced narrowing is an important sign of profound disease of the brain, and is very frequent in beginning dementia paralytica.

Great scientific interest attaches to the examination of the skull, although, in the diagnosis of psychoses, only the most marked changes come into question. These never occur when the mental condition is entirely normal, while variations from the normal are also found in the skulls of sane individuals. These include the sexual differences. The female skull is smaller, on the whole; its height is

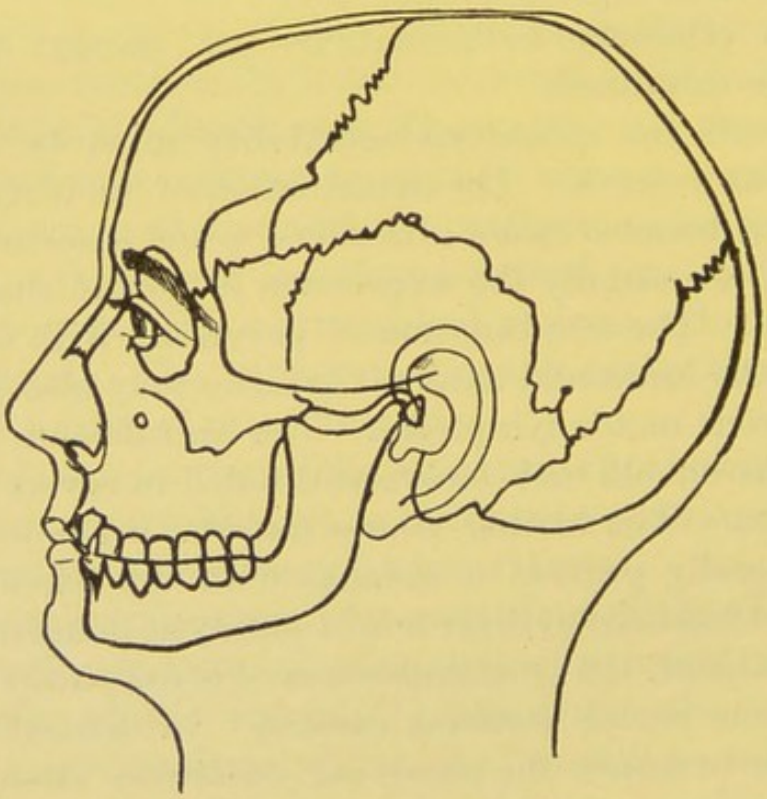


FIG. 8.—(AFTER MERKEL.)

less, but its breadth is more developed. The base of the female skull is narrower and shorter. The most striking peculiarity of the female skull, as seen in the living subject in profile, is the line of the upper curvature; the

flattening of the parietal region passes quite suddenly on the one side into the vertical frontal line, on the other side into the sloping line of the occiput, so that more or less angular curves develop on both sides. In the male skull

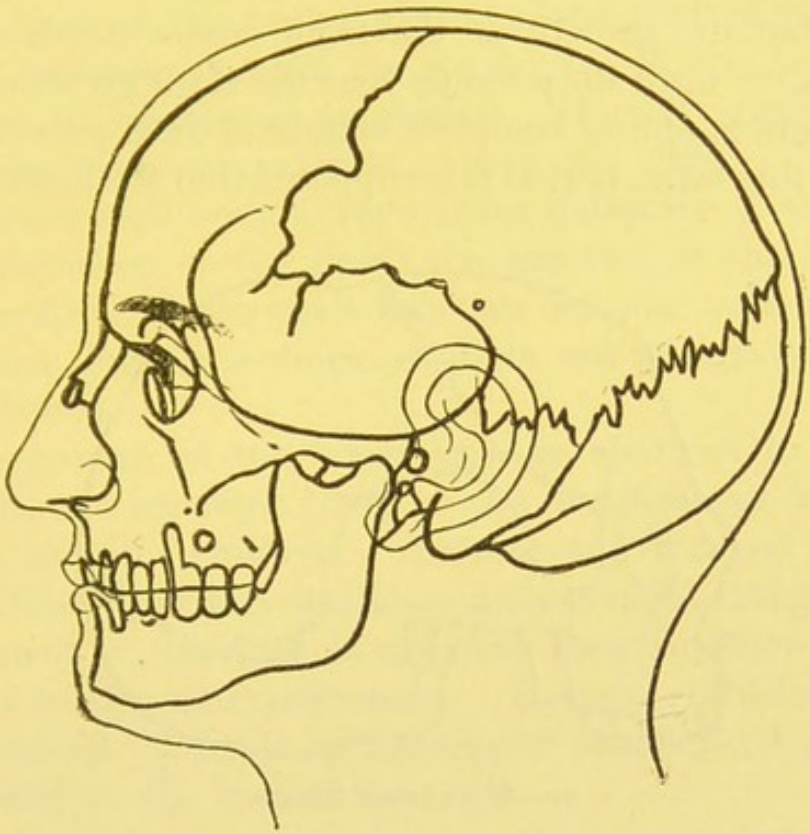


FIG. 9.—(AFTER MERKEL.)

this line is arched; seen from the front, it is also distinguished by the greater prominence of the parietal eminences, so that it becomes angular compared with the rounded female skull.

In the different races we find numerous variations in the skull, which cannot be utilized in the diagnosis of psychoses because they are often observed in the sane; for example, large uniformly developed skulls, kephalones. On the other hand small skulls, microcephalus, generally reveal an abnormal formation of the brain. Among other forms I will call attention to the very frequent saddle head (Fig. 10), in which a saddle-shaped depression occupies the site of the large fontanelle.

The fœtal brain does not fill the skull completely, a

considerable space between the two being filled with fluid. In its further growth the brain changes its position in relation to the skull because the hemispheres grow mainly from in front backward. The brain probably continues to grow until the age of twenty-five years, but the growth of the skull ceases much earlier. From birth until the seventh year the skull grows rapidly, then there is almost complete standstill until puberty, and during this latter period it is supposed that the brain grows

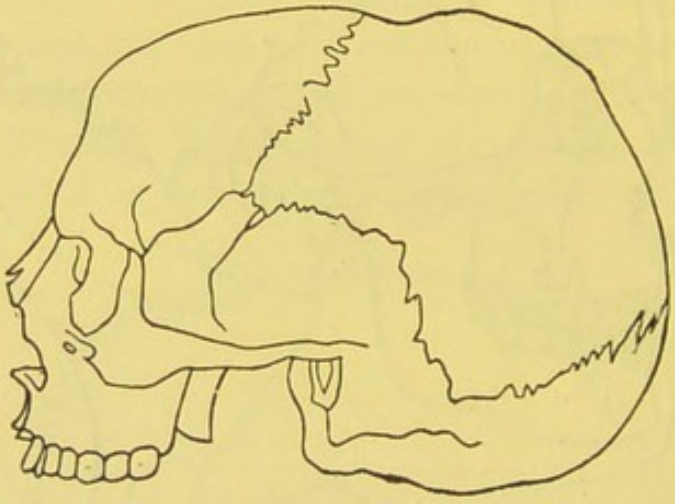


FIG. 10.—(AFTER MERKEL).

more markedly. After puberty the skull grows in a more uniform manner.

Three factors come into play in the growth of the skull—the growth of the brain, constituting a force which presses from within outward; the traction or pressure of the muscles attached to the skull; and the structure of the bones themselves. These influences are more important than pelvic pressure during birth. The effects of the latter may last for months and years, but the brain is immature and there is conriderable room for accommodation within the skull. The three factors mentioned must always be considered as coincident in point of time. That the shape of the skull is influenced by the growth of the brain is shown by the unilateral flattening in idiots with atrophy of one hemisphere. Slight differences between the

two halves of the skull possess little value in psychiatric diagnosis.

Among the muscular forces the chief part is played by the traction of the muscles of the neck and the pressure of the muscles of mastication. Strongly developed muscles on the back of the neck flatten the occipital curve, while feeble muscles increase its convexity; if the bones are soft, as in rickets, a permanent deformity may result. Vigorous temporal muscles narrow the skull. In an occupation which leads to permanent obliquity of the trunk (and therefore of the head) the muscles of the neck act unilaterally and the skull becomes oblique. As a matter of course, such a scoliotic skull is not a sign of mental disturbance.

The growth of the bones may be changed in general rachitis, and constant lying on the occiput may be injurious in rachitic children. Another significance attaches to ossification of the sutures. As a general thing, the development of the skull is retarded in a direction perpendicular to the ossifying suture. If the ossification occurs prematurely, it leads to extremely pronounced changes, especially at the base of the skull.

Meningitides in early life may change the intracranial pressure and, in combination with other causes acting from the outside, may lead to various deformities of the skull.

In making measurements we follow the plan adopted by the German Anthropological Society.

The horizontal plane (Fig. 11, *h h*) is determined, on the macerated skull, by two straight lines which connect, on both sides, the lowest point of the inferior rim of the orbit with a point in the upper rim of the auditory canal lying vertically above the middle of the auditory meatus. In the living subject this plane can only be determined approximately, but with sufficient accuracy for practical purposes. The plane can be rendered visible by applying a rubber ring. The head to be examined must be placed in such a position that this plane is parallel to the natural

horizon. The horizontal planes should be marked out before taking the longitudinal dimensions of the skull, because, when the occiput is very prominent, the greatest length, *Lgr* (to the external occipital protuberance) does not coincide with the ordinary measure of length, the so-called straight length L which passes from the middle of the arch of the eyebrows above the nose to the most prominent point on the occiput, parallel to the horizontal plane. The auricular or ear height, OH, is the distance between the upper rim of the auditory meatus to the point

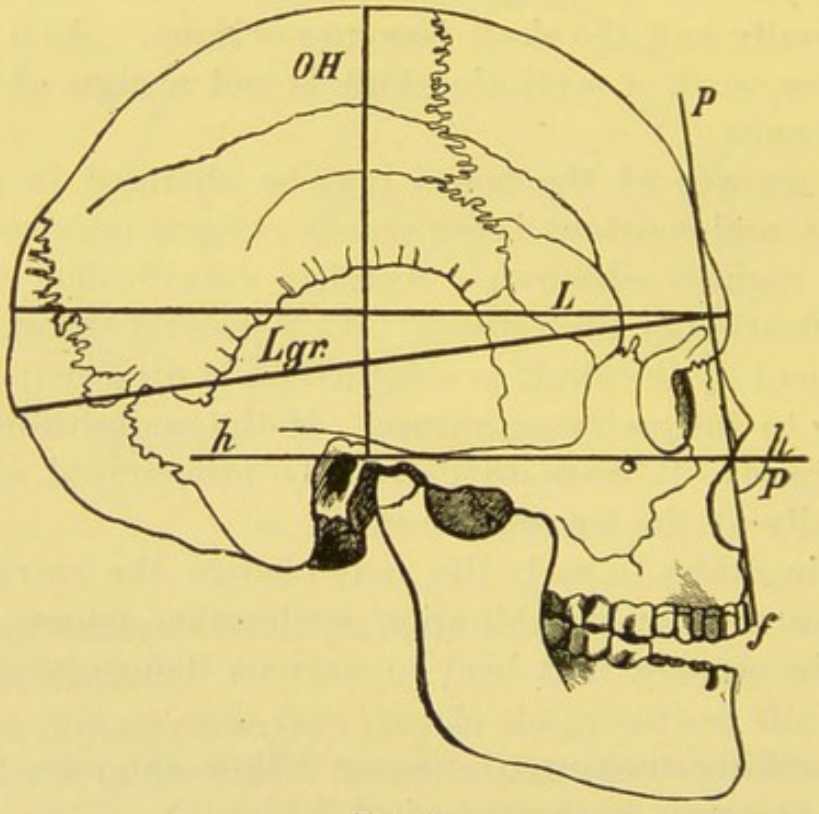


FIG. 11.

of the vertex situated above it in a vertical line. The greatest width is measured, wherever it may be found, to the exclusion of the mastoid processes. The distances between the malar processes and between the auditory foramina are measured with a pair of compasses, the other distances are measured with the tape.

A certain proportion of breadth to length has given rise to the terms long and short skull and the intermediate mesocephalic skull. A so-called cranial index has been

introduced, the value of which is expressed in figures when the transverse diameter is multiplied by 100, and the product divided by the longitudinal diameter. Finally, the inclination of the profile line, *pf*, to the horizontal plane may be utilized in order to determine the profile angle P. When this angle is much less than a right angle, the individual is called prognathous, and orthognathous when the angle approaches a right angle. Prognathism is almost always associated with premature cessation of the growth of the sphenoid and ethmoid bones, and hence indicates a so-called sphenoidal kyphosis, with which cretinic deformities are apt to be combined.

The following are the average measurements in the living subject:

	Man.	Woman.
Straight longitudinal diameter	18 cm.	17.5 cm.
Greatest transverse diameter	15	14
Ear height	11	10.5
Distance between the zygomatic processes	11	11
Distance between the auditory foramina	12.5	11.5
Horizontal circumference (measured through the ends of the greatest longitudinal diameter)	55	53
Sagittal circumference (from the root of the nose to the external occipital protuberance)	35	33

Profile angle:

Prognathous	82°
Orthognathous	83°–90°

$$\text{Length, width, index} = \frac{100 \times \text{width}}{\text{length}}$$

* Dolichocephaly (long skull) up to	75
Mesocephaly	75–80
Brachycephaly (short skull)	80–85

In addition we may take the following measures, which show particularly the differences between the anterior and posterior halves of the skull, while the lateral differences are found by comparing the lateral semi-circumferences taken separately.

	Man.	Woman.
Auriculo-occipital line (from the anterior border of one mastoid processto the other over the external occipital protuberance).	24 cm.	22 cm.
Auriculo-frontal line (from the anterior rim of one auditory foramen to the other across the glabella)	30	28

The various points to which we have referred as necessary to a comprehensive psychiatric examination do not complete the list. For example, the peculiarities of speech and writing must be carefully noted. Writings may be very important when it becomes necessary to arrive at a conclusion without seeing the patient. It is a very common fact that patients who are able to conceal their condition during conversation, freely reveal their morbid ideas in letters.

A single personal examination may suffice to determine whether the patient must be removed to an asylum or whether he may be treated at home, but it is insufficient for a complete psychiatric examination, and in difficult cases prolonged observation is necessary. In doubtful cases the asylum is the proper place for protracted observation, because the trained attendants supplement the personal observations of the physician.

The second point in diagnosis, *i.e.*, whether the psychical disorder is independent or dependent upon another cerebral disease, can also be ascertained with certainty only after careful continued clinical observation. Mistakes have occurred in cases of drunkennesss, typhoid fever, acute meningitis, and poisoning. As a rule, drunkenness is easily recognized by the odor of the breath, the speech, and the tottering gait, but in many cases there is great similarity to mental disorder. In fact, drunkenness is really an artificial insanity. In it we may find indications of all forms of insanity, from slight melancholia to complete inhibition of the mental functions, such as is observed in idiocy. There may also be conditions of excitement in which the bodily and mental activities are in-

creased. Increased self-consciousness and impulse to movement remind us of mania, boastful speeches made with a stammering tongue may make the differentiation from similar phenomena in general paresis almost impossible. The resemblance may be still greater when, on account of a special predisposition, the intoxication develops as a rapidly subsiding mania. Sometimes drunkenness acts as the immediate exciting cause of permanent insanity. As a matter of course, the differentiation is impossible when an insane individual becomes drunk. Usually the symptoms of drunkenness are then very violent or a very small amount of alcohol suffices to produce intoxication, as the majority of the insane are very susceptible to alcohol.

Typhoid fever sometimes begins with the symptoms of a maniacal attack with great excitement, at other times with symptoms of melancholia. When mental disturbances begin unexpectedly, the suspicion of typhoid fever should be kept in mind, especially in young people and when the disease is epidemic. In a few days the fever and other symptoms will clear up the diagnosis.

2. *Diagnosis of Recovery.*

This problem is especially difficult in individuals who suffered from feeble-mindedness or hereditary taint before the onset of the psychosis proper.

The difficulty resides chiefly in the fact that the symptoms which are proof of the disease have subsided, but not disappeared entirely, and are apt to return under slight provocation amid different surroundings. For this reason the judgment of the relatives is often more decisive than that of the asylum physician because the restoration of the previous personality is better recognized by them. We must here take into consideration the possibility that patients may conceal material symptoms of their disease. Hallucinations and delusions which the patient knows are regarded as morbid by the physician are sometimes concealed by him, in order to secure his discharge from the asylum or from treatment. This dissimulation may be

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skilfully practised by patients in whom the original affect has disappeared. But we will either be able to detect an antagonism between the patient's speech and actions, or the careful observation of the former course of the disease and the previous life of the patient will confirm any doubt concerning the simulated recovery. In other cases only the discharge from the asylum will show the dissimulation by the irrational acts which soon make their appearance. The dissimulation is very dangerous in suicidal melancholics who sometimes conceal their morbid feelings and ideas with great skill. This danger is to be kept in view, particularly when the tendency to suicide has been manifested several times in the family. It may be very important in such cases to see the patient's letters, in which he often discloses his most secret thoughts. At times, also, the written characters may reveal the attempt at dissimulation.

It is sometimes very important to determine whether insanity is real or simulated. This may even come into question in non-judicial cases. In imbecile and hysterical insane, in particular, there is sometimes a tendency to exaggerate. Although the intentional deception can usually be recognized, it is more difficult to exclude the really coexisting mental disorder. The matter becomes still more complicated from the fact that simulation is practised chiefly in those forms of insanity which develop upon an hereditary basis in the form of degeneration, and hence *per se* exhibit numerous deviations from the ordinary clinical histories. Simulation is practised in the main, however, by criminals who desire to avoid punishment. But the malingerer grows tired of his rôle so much the more readily as exaggeration of the individual symptoms is one of his most common mistakes. Such deception is easily discovered in an asylum, and, hence, doubtful cases should be sent to an institution. Here the observation of undisturbed sleep is easily made, and therefore conditions of excitement are more rarely simulated. Another mistake is the combination of different forms of disease—for exam-

ple, melancholia and epilepsy, which are not often associated in reality. The malingerer is apparently irrational and gives entirely wrong answers, but it is apparent that he is able to follow the conversation, because he soon manifests a symptom which the physician had referred to as wanting. It is especially difficult for him to imitate the physical concomitants of a psychosis—for example, the loss of weight.

The physican should always avoid answering the question, so often put by the judiciary, as to the responsibility of a patient, and should confine himself strictly to the question of mental health or disease. The question of responsibility must then be determined by the legal authorities.

C. THE BORDER LINES OF INSANITY.

These innumerable disorders of the mind and of ethical feelings must be considered from a common standpoint, *viz.*, that of degeneration, which in the majority of cases is inherited or congenital, and is much more rarely acquired.

Among the many expressions of mental taint we have already described a series of imperative conditions, and among these we will again refer to agoraphobia or fear of places. It is almost always associated with other conditions of fear, which develop after mental and bodily strain upon the basis of a morbid predisposition of the nervous system. The peculiar so-called "gruebelsucht," which is very often associated with fear of contact, is also not an independent disease, but is based on a morbid predisposition that is shown by other mental and bodily symptoms. But it is rarely possible to demonstrate such conditions as part of a pronounced psychosis (particularly paranoia); we must be satisfied with the demonstration of the morbid predisposition which stands on the border line of insanity.

The desire for food, and especially for sexual gratification, which also belong to healthy life, may occur imperatively in certain border conditions, the morbid basis of

which is often difficult of demonstration by the physician. This is only possible when he finds an hereditary morbid predisposition in the mental and physical development of the individual. There is also another series of symptoms known as the impulse to commit suicide, to steal, to drink, and to commit arson, but these impulses do not exist independently of other mental disturbances. All these impulses can only be understood after the following psychological considerations. In every healthy individual there is an impulse to action as the result of the internal vital processes. As a rule, quiet reflection and conscious selection furnish the direction of his acts. But as a man who is taking a walk, for example, strikes the weeds with his cane, so there are hundreds of outlets to this unemployed impulse to activity in acts of no moment, provided there is no opposing stimulus. By means of antagonistic notions of decency and propriety the mentally healthy individual regulates any pronounced feelings which develop out of healthy vital processes. The mentally feeble individual yields to them without reflection. Hence in many cases we have to deal, not with increased, but with unrestrained impulses. If a patient in an asylum steals his neighbor's bread, this will not be called an impulse to steal, because it is merely a trivial satisfaction of his desire; if an insane passionate smoker takes cigars wherever he finds them, he follows a well-grounded impulse. The unconcealed exhibition of tendencies, passions, and vices is then not a phenomenon of disease, but is merely manifested on account of the disease. Such insane, in whom the resistance arising from the sense of duty and rational reflection is wanting, can be led to commit crimes at the slightest impulse.

It is difficult to distinguish normal from morbid impulses in the insane, because the latter, still more than the healthy individual, is seized by affects and his actions are thus determined. It is often difficult to decide to what extent revenge, fear, homesickness, or thoughtlessness have led to an act of violence. It is only when insanity can be excluded, that

their full significance may be attributed to these affects as normal motives of action. Otherwise the physician must demonstrate that morbid condition of the mind, on the basis of which the unbridled or morbidly intensified impulse has found expression. It may be said that these impulsive conditions are part of a psychosis and are not on the border-line. The incendiary impulse, in particular, is often regarded as an independent disease, but its morbid character is only determinable when an organic taint of some kind is present. This is often facilitated by the fact that the incendiarism occurs so often at the period of puberty. Here the obscene impulse of the sexual development is added to the others which arise from the internal vital processes, and finds its relief in a manner which is often surprising to the individual himself. The proof is most difficult in the milder grades of feeble-mindedness, whose signs occasionally consist only of morbid irritability, stubbornness, conceit, lying, etc. Hence, an opinion concerning such young incendiaries not infrequently requires prolonged observation. Girls are affected in this way somewhat more frequently than boys.

Another group of morbid conditions which stand on the border-line of insanity is exemplified by eccentric individuals. These include adventurers, who often change their abode without reason, and take long journeys. A periodical course of the vagrant tendency and its accompanying symptoms is often more or less marked. Some of these restless wanderers finally end in an asylum. Many remain free from restraint, but are in constant conflict with established public order. Certain spendthrifts belong to this class, but their condition can only be regarded as morbid when degeneration can be traced throughout their entire development.

In some degenerative conditions the elements of allied forms of insanity can be recognized, although the boundaries of insanity are not overstepped. Some individuals, apart from a few peculiarities, show no signs of mental disorder to their family for many years. Then some

trivial insult becomes the starting-point for constant complaints. Their obstinacy on this point soon becomes striking, and as they make themselves disagreeable on this account, fresh food for further complaints is furnished. Real delusions and hallucinations are wanting, and a system of delusions does not always develop out of such conditions. In very few cases a progressive course terminating in imbecility is observed. Litigious and quarrelsome persons may become veritable thorns in the flesh, but the morbid basis is rarely recognized. It is only when the impulsive thirst for lawsuits and quarrelling threatens to destroy fortune and happiness, that the eyes of the relatives are opened to the existence of a mental disorder.

Religious enthusiasm and fanaticism often stand on the border-line of insanity. The great majority of such individuals suffer from hereditary taint.

D. POST-MORTEM FINDINGS.

These possess very little value as an aid in the confirmation of diagnoses in psychiatry. If the diagnosis cannot be made during life, the autopsy will hardly ever aid in arriving at a conclusion. Even the distinct findings in certain forms of imbecility merely justify the assumption that some psychosis has run its course. At the most, extensive atrophy of the convolutions of the frontal lobes point to dementia paralytica, and extensive defects in the brain render a previous idiocy probable. Even a microscopical examination is not entirely demonstrative. If the psychosis has been observed during life, then all the findings in the brain become important, especially diffuse changes in the cortex. Functional disturbances, including those associated with congestion or anæmia, usually leave no traces.

VI.

THE TREATMENT OF INSANITY.

A. PSYCHICAL TREATMENT.

THE physical basis, especially the brain and central nervous system, is only involved to a certain degree in mental disorders, even in the most pronounced cases. Only in so far as there is a change in the psychophysical apparatus may we expect to exert an influence on the course of the disease by suitable treatment. All other bodily changes, so far as they influence the mental condition, are important points of attack in treatment. Bodily and mental treatment, however, must always go hand in hand. In determining the limits beyond which psychical treatment loses its efficiency, it must be remembered that voluntary thought in concepts is not dependent immediately upon the psychophysical mechanism, while all emotions are intimately connected with it. The latter may, therefore, be influenced immediately, the former only through the medium of the emotions. As all psychical processes are associated more or less with emotions, a large field remains for psychical treatment, especially in recent cases.

It is evident that every attempt to refute, by means of reason, a patient's delusions must be useless, nor can we exert an immediate influence upon his will.

But much can be effected by influencing his emotions and moods, both as regards the latter, and also the higher psychical processes dependent upon them. Experience teaches, however, that even the immediate influence upon the moods is limited, and that often we can merely keep away new injurious influences. Many excitements and exacerbations may be produced by rousing the feelings,

and hence can be avoided by a friendly and equable demeanor.

The personality of the physician plays the principal part, and by his sympathy, freedom from bias, and quiet decision he must increase the ascendency which he has already gained from the correct judgment of the case. The influence of the physician's personality upon the insane is especially evident outside of asylums, while the latter possess powerful auxiliary aids in treatment. In an asylum the visits of the physician exert a continued effect upon the patient, because all the regulations of the institution prove to him that the physician is at the helm.

For this reason an asylum is the proper place for those patients who at first resist treatment. Sometimes a hospital will suffice temporarily, because the influence of the physician is much greater than when the patient is living at home. For the present we will consider chiefly the period during which the patient has not entered an asylum. We desire to influence his mood; for this purpose the surroundings must be sympathetic, the patient's interest must be aroused and diverted from the causes of the disease. This is generally possible when we bear in mind that violent affects require treatment in asylums, while the milder cases, which are amenable to this form of treatment, require the advice of the practitioner. The laity are inclined to look for a cure in distractions. While it cannot be denied that conversation, the theatre, and concerts occasionally cause relief, this is generally so fleeting that the family soon recognize the self-deception. Even the temporary improvement disappears as soon as the patient recognizes the object of the distraction. At all events it is dangerous to subject a fresh psychosis to constant bodily and mental restlessness engendered by frequent amusements and journeys. We must urgently caution against bringing such a patient in contact with new stimuli. If he cannot remain longer in the family, he should enter an asylum. Only older forms of disease, which are lacking in affects, will be aided by such distractions.

The best distraction for all is moderate, regulated occupation, and preferably in the patient's own calling, if this has not been the cause of the disease. Tendencies and habits are often inseparably united with the occupation. Hence women suffer particularly from removal from home, and we should avoid losing time in travel, etc., if it is impossible for them to remain in the family.

When this is no longer possible the alienist must adopt other principles in treatment in an asylum. In the beginning, at least, our object must often be to remove the patient from the action of those daily irritants which are often exercised upon him in his business, in the cares of self-support, in the irrational conduct of his relatives, and often in violent reproaches. In recent cases it is then always better for a time to break off all communication with the family in order to avoid emotional excitement. As a rule, visits from members of the family are only useful during convalescence. As a matter of course, this is not true of chronic conditions and of the free intervals of a periodical affect. In such cases visits cheer the monotonous life of the patient. These remarks also hold good of communications in writing.

But here, as everywhere in psychiatry, we must individualize, and the treatment must be changed according to the special individuality of the patient. Hence the great importance of a knowledge of the previous life of the patient.

It is evident that psychical treatment must consist, in great part, of the avoidance of injurious influences. The view is still widespread that not alone should we avoid opposing the patient, but that we should express assent to his fears, tendencies, and particularly to his delusions. In many cases this is injurious; fears of an obscure nature may be rapidly converted into firm delusions and the patient's own doubts may be removed. A contradictory opinion should be expressed cautiously in order to avoid dispute, and in general the morbid concepts should be discussed as little as possible. The patient should be told

frankly that he is regarded as sick, and he should be treated with uniform, friendly patience and quiet sympathy. In other ways, also, frankness is the only proper method; deception is generally as bad as force. If a patient is to be taken to an asylum, deception and artifice are harmful, because they give rise to distrust of the family and the physician. A quiet, but firm declaration that the disease necessitates such a measure will generally make the employment of force unnecessary. As a matter of course, it may be unavoidable in conditions of violent excitement and great impairment of consciousness.

As a rule, religious communications should not be permitted in recent cases; in permanent cases it may often be allowed and is occasionally even desirable.

B. PREVENTION OF INSANITY.

The prevention of insanity presupposes an accurate knowledge of its causes, the most prominent of which is heredity. Here we may refer to the question of the marriage of the insane or of those suffering from an hereditary taint. The fact that unmarried individuals are relatively more liable to insanity than the married, has sometimes led to an affirmative answer to this question. The rare cases in which marriage has appeared to prevent the outbreak of insanity do not justify us in recommending marriage generally under such circumstances. On the other hand, the repression of long-standing love may cause still greater injury to an individual in danger of becoming insane.

The physician must also consider whether the marriage in view entails danger of the propagation of mental and allied nervous disorders to the offspring. If the other partner is healthy and belongs to an undoubtedly healthy family, then the affection and other circumstances should decide, provided that no decided mental disorder has yet developed. But if the other partner also suffers from hereditary taint, the physician should decidedly oppose the marriage. The danger appears to be greatest when

inebriety is associated with other nervous disorders. The question of marriage may also arise after recovery from an attack of insanity, or after decided improvement of the more violent symptoms. If recovery has lasted for several years after a single attack and both parties have no hereditary taint, marriage may be allowed. If the recovery is questionable and only one of the parties has an hereditary taint, it should be opposed unqualifiedly. I would also advise against marriage when the recovery is questionable, even if there is no hereditary taint on either side.

It is also the function of the physician to guard against the development of germs of the disease during childhood and youth, or to prevent its development when hereditary taint is present. This is done by carrying out the generally recognized principles of hygiene and a careful course of education. Special precautions are necessary at the period of puberty, and aberrations of the sexual impulse must be carefully watched. If the congenital or acquired taint becomes more distinct, unusual attention must be paid to the choice of a calling. We must warn against any occupation which requires great strain or exciting responsibility; a uniform activity remote from the tumult of a large city may maintain the tottering equilibrium of the threatened individual. A special danger attaches to the abuse of alcohol.

C. BODILY TREATMENT.

1. *General Standpoint and Modes of Treatment.*

The principle of rest and the prevention of new injurious influences holds good for the bodily as well as the psychical treatment. We can merely remove the causes or ameliorate the existing symptoms of the disease. Disorders of the female sexual organs must be cautiously examined and treated, because much injury may be done in this direction. It must be remembered, however, that the recognition of bodily diseases in the insane is often extremely difficult, because many patients say very little

or nothing concerning their sensations. Hence the most careful objective examination of all organs must be a preliminary to bodily treatment.

The former practice of venesection has now been abandoned in great part, but in violent cerebral congestion, in recent as well as protracted conditions of excitement, rapid improvement may follow venesection. In such conditions, as a rule, an equal effect is produced by local abstractions of blood (cupping and leeches), especially as their repeated application causes a more permanent effect. As a general thing, however, the insane should be deprived of as little blood as possible.

In anæmia we can sometimes increase the supply of blood to the brain by strengthening the heart's action, especially by the moderate use of alcoholic drinks.

Rest in bed is also important for the proper supply of blood to the brain, and possesses so many other advantages that it should be employed in all recent cases. It protects against loss of heat and strength, it keeps irritating sensory impressions remote, and offers the patient bodily and mental rest. Anæmic and feeble patients, who exhaust their powers by constantly running about, usually show considerable improvement soon after taking to bed. In addition, the diet should be nourishing, but non-irritating.

Rest in bed can always be carried out in private practice (except in cases of violent excitement, which belong in an asylum), but external conditions often prevent the employment of lukewarm baths, which are an almost equally valuable remedy for the improvement of recent cases. The uniform moderate stimulation of all the cutaneous nerves produces a refreshing effect. Cutaneous respiration increases after the cleansing of the skin, the temporary dilatation of the cutaneous vessels stimulates the circulation, and the general effect is almost always quieting in anxious and excited patients. The bath is generally followed by increased appetite and a refreshing sense of being tired. In insomnia sleep can sometimes be secured by prolonged lukewarm baths which, if kept up for several

hours, should have a temperature of 28° R.; otherwise 26–27° R. will suffice. But such prolonged baths are rarely pleasant to the patient. If it is obtained by force, the bad effects will appear in the greater irritability of the excited patient.

Wet packs can only take the place of baths to a limited extent. They should not be applied more than a few hours because they are inconvenient and soften the skin. They often produce quiet sleep. Experience shows, however, that cold water cures rarely produce a good effect in psychoses. Shower-baths are not curative measures, but merely the remains of measures of restraint. Cold river and sea baths are too exhausting in recent, fully developed psychoses, while they may be advantageous in the allied conditions of neurasthenic individuals. Foot-baths sometimes act well by derivation; the addition of mustard or faradisation in a warm foot-bath increases the derivation, and may act as a sedative and produce sleep. Cold compresses to the head cause temporary relief in rush of blood to the head and headache; an ice-bag has the same effect.

The use of the milder cutaneous derivatives is occasionally desirable. Dry cups, blisters, feebly irritative plasters, applied best to the back of the neck, may be employed. All cutaneous irritants which lead to prolonged suppuration must be avoided. But if a local pain in the skull continues for a long time, we may try to produce a deep inflammation by the application of tartar emetic ointment to the shaved scalp, according to Autenrieth's method; this is apt to cause exfoliation of splinters of bone. Good results have been observed in such cases, and the absorption of adjacent exudations within the cranium is possible in this way.

A similar resolvent action has been attributed to the passage of the galvanic current through the head, but this should only be done by an expert. The use of the faradic current is simpler; its action is generally stimulating and refreshing. This is especially true of general faradiza-

tion, in which one electrode is placed beneath the feet in a foot-bath, and the other is stroked over the body.

In cases of imperfect nutrition, massage is sometimes used to advantage. Under certain circumstances excessive feeding may also be useful.

2. *Hypnotics.*

Insomnia is characteristic of the development of many psychoses, and its relief demands the urgent attention of the physician. Apart from baths, this is effected mainly by the administration of hypnotics. At the start it is advisable to produce sleep, if possible, by other means, for example, heavy beers and wine, which often do well in anæmic and exhausted individuals. On account of the long duration of most psychoses, there is danger that the patient may become addicted to certain hypnotics, and hence they should be changed from time to time.

The best hypnotic is chloral hydrate which, in doses of from two to three grams, produces a quiet sleep of several hours, without specially disagreeable after-effects. Large doses and long-continued administration should be avoided. In diseases of the heart and vessels it may lead to vascular paralyses and their sequelæ. It is, therefore, better to give smaller doses (one to two grams) combined with morphine. On account of its disagreeable taste, which is best concealed by adding succus liquiritiæ, it is often refused by the patient. It may then be given per enema.

When chloral hydrate can no longer be given, paraldehyde should be used. It may be given for a longer time than chloral without producing injurious effects. At the start it is given in doses of 5.0 gm., after a time it may be increased to 10.0 gm. or more. The taste is still more nauseous than that of chloral. It is concealed somewhat by adding one and one-half times the amount of tinctura aurantii simplex, and then shaking. The after-taste and odor are extremely disagreeable and sometimes last twenty-four hours. Hence, it is given occasionally per enema with an emulsion of oil.

In many cases these two excellent hypnotics cannot be employed, principally on account of their bad taste. Among the tasteless hypnotics we may mention sulfonal. This dissolves in water with great difficulty and is almost entirely tasteless, so that it may even be given unnoticed in solid food. 2.0 gm. sometimes give rise to dizziness which may last quite a while; it is very efficient in divided does of 0.5 gm. from two to six times a day. Its action varies greatly in different individuals. An eruption resembling that of measles is observed occasionally after its administration. In several old, marantic individuals the urine for a long time had a Burgundy-red color and hæmoglobinuria was present; in one case this disappeared after the discontinuance of the drug.

Certain alkaloids are also employed as hypnotics, chiefly by hypodermic injection. We must be guarded in their employment, not alone on account of the risk of acquiring the habit, but also on account of disagreeable after-effects. Internal administration should first be tried, and hypodermic injections used only after the former has proven unsuccessful. Hyoscine, given internally as hyoscine muriate in doses of 0.001–0.002, has no disagreeable after-effects, but hypodermic injections of one-half to one mgm. not alone produce profound sleep, but also a tottering gait, dilatation of the pupils, dryness in the throat, and a feeling of confusion in the head. The sleep is not refreshing, but the quiet produced for several hours is so complete (occasionally after a brief preliminary period of violent excitement) that it may be utilized, for example, in overcoming the resistance of a maniacal patient to entering an asylum.

Injections of morphine furnish a more harmless method of producing quiet in such cases. Morphine is also a curative remedy in insanity. Its effect in relieving pain is the most important, and it then acts indirectly as an hypnotic. Hypodermic injections act more rapidly, but there is less danger of the morphine habit when the drug is administered internally. In general it may be said that injections act as a temporary sedative in the most

varied cases of insanity, but that we may rarely convert this into a permanent action by methodically repeated applications. In circular insanity, however, experience seems to show that it is possible, by means of repeated injections of larger doses, to interrupt the doleful alternation of cheerful and depressed moods. In conditions of great weakness and in strong excitement, attended with dilatation of the vessels of the brain, morphine is contra-indicated. Caution is also necessary in valvular lesions of the heart. The resulting nausea and vomiting, which are often annoying at the start, soon disappear. More serious import attaches to other after-effects, such as paralysis of the vessels, with or without respiratory paralysis. The ordinary initial dose is 0.015 ctgm. The increase in the dose depends upon individual circumstances. Larger doses than four to five centigrams should not be exceeded, and these are only reached after the drug has been administered for several weeks or months. Sometimes a sedative action may be produced by gradually diluting the solution until finally distilled water is given, of course without the knowledge of the patient.

The action of opium is similar to that of morphine. It is generally believed that it acts better than morphine in the melancholic terror conditions of females. It is often given in anæmia. The resulting constipation compels the use of enemata and laxatives. Its taste is not pleasant, so that it may be given by enema or in the form of suppositories. Opium is best given in the shape of tincture, ten to twenty drops, two to three times a day, or in powder, beginning with 0.03 twice a day, and rapidly increasing to several decigrams at a dose. It should be discontinued gradually, and should not be given in hypnotic doses.

When the ordinary hypnotics fail us, we may resort to belladonna, cannabis indica, stramonium, apomorphine, and the innumerable other similar preparations.

The bromides are used extensively to diminish irritability in various directions. Potassium bromide is chiefly used, and the salts of sodium and ammonium are only

useful in combination with the former. It is employed to act directly on the cerebral cortex in epileptic and other irritative conditions of the motor centres, and in periodical conditions of excitement which are unattended with vascular changes. Unlike opium, the bromides act by means of chemical changes in the nervous tissues. The diminution of peripheral irritative conditions of a neuralgic character greatly enlarges the field of application of the bromides. They are given in irritative conditions of the sexual organs and also in non-peripheral sexual irritation; they are more efficient in females, particularly in menstrual conditions of excitement. But the diminution of sexual excitement requires very large doses, and, after protracted administration, these give rise to the well-known disagreeable after-effects.

3. *Treatment of Important Symptoms.*

A purely causal treatment is possible in very few cases of insanity—for example, in febrile diseases, syphilis, diseases of the kidneys, stomach, etc. But in the majority we must be content with treating the most important symptoms of insanity.

Among the conditions attending insanity great practical importance attaches to the refusal to take food. This is observed most frequently in melancholia as a result of hallucinations or delusions. The patients taste or smell poison in the food, or they abstain in order to fulfil a vow or because they are unworthy of eating. In some the abstinence may be due to a desire to commit suicide or to the notion that the digestive organs are impermeable. At first we must not attach much importance, outwardly, to the patient's refusal to take food, because repeated and urgent requests to eat may even confirm his fear of poisoning. In many cases hunger is our best ally. After a few days this occasionally becomes so great that the patient ravenously devours the food placed before him. In many cases it is well to disregard apparently the refusal to take food, to place the meals regularly before the patient,

and to leave him alone with them for some time. Many eat when they think themselves unobserved. This is more apt to occur in bed, and indeed rest in bed is the first requisite, in refusal to take food, in order to maintain the bodily strength and heat. Expectant treatment must vary with the individual case. When consciousness is impaired and will-power diminished, it is often sufficient to place the spoon to the lips or to push the food into the mouth, whereupon the movements of mastication and deglutition will occur in a reflex manner. Delusions or hallucinations can sometimes be overcome temporarily by the positive assurance that eating is permitted, or by a quiet command. The fear of poisoning is sometimes relieved by tasting the food. Some patients will eat eggs, others take their neighbor's food, which appears to them innocuous. But, as a general thing, hunger proves the strongest incentive. If the patients drink water—and this is often the case even when otherwise there is obstinate refusal to take food—we may add sugar to the water. In fact, the drinking of water is a reason for delaying the apparently necessary forced feeding.

We must also attempt to keep the mouth clean by rinsing with water. The treatment of an accompanying gastric catarrh or constipation is sometimes facilitated by the fact that the patients do not resist the administration of drugs whose preparation in the apothecary appears to them to be free from suspicion. Enemata of water should be tried, because a sufficient supply of water causes less danger from prolonged abstinence from food.

With a good condition of nutrition and rest in bed a week may be allowed to elapse before proceeding to forced feeding. Under favorable circumstances we may even wait two weeks or more. But if the complete refusal of food has been preceded by a prolonged period of imperfect nourishment, or if other exhausting causes were at work, then artificial feeding becomes necessary within a few days.

The best method is the introduction of a tube into the

stomach, either through the mouth or nose. As the mouth can be opened, in many cases, only by brute force, the introduction of the tube through the nose is almost always the milder method. The soft nasal sounds (Jacques' patent) may be highly recommended. They should have a funnel-shaped enlargement, for the convenient reception of the nutrient fluids. As a matter of course, the patient must be held firmly by one or more persons, and this is best done during dorsal decubitus in bed. The tip of the tube is made flexible by dipping it for a short time in hot water, and is slightly curved in a downward direction. The tube is introduced slowly and generally meets with resistance, which is easily overcome, at the posterior pharyngeal wall and at the level of the larynx. Although the sound usually glides freely past the larynx, especially if the tip is not bent too strongly, the danger of entering the trachea is to be kept in mind in patients who are paralyzed or in whom severe disorders of consciousness prevent violent reflex movements. A tolerably certain means of ascertaining whether the tube has really entered the stomach, consists of auscultation of the organ while a third person is blowing air through the sound. In the adult, when the head is bent backward, the distance from the incisor teeth to the cardiac orifice of the stomach is forty to forty-four centimetres (maximum, forty-six, minimum, thirty centimetres), so that a mark made upon the sound will inform us concerning the position of the stomach extremity. A single feeding often suffices to make the patient eat voluntarily. Otherwise the feeding must be performed once or twice a day, according to the patient's strength. The entrance of the sound is facilitated by oiling it, by gently pushing it forward and backward. A movement of deglutition facilitates the introduction, and may be produced by pouring a few drops of water into the free nostril; the patient then, in a measure, swallows the sound. At first we pour in only a few drops of fluid, which must be free from clots, etc. In order to be absolutely sure we may begin with a few drops of water. At

the first feeding we should give at the most one-half litre of the nutrient fluid, in order that the retracted stomach with its insufficient supply of gastric juice may not be overburdened. Great difficulty sometimes arises on account of vomiting, which occurs involuntarily after the introduction of the fluid. The addition of a few drops of chloroform or brushing the pharynx with cocaine may relieve this symptom. We are generally powerless when the vomiting takes place voluntarily as the result of delusions. Such patients also extrude nutrient enemata, and we must then allow them to starve to death. Obstinate involuntary emesis may lead to the same result because the continued vomiting of the gastric contents alongside the sound forces us to discontinue the artificial feeding on account of the danger of suffocation or foreign-body pneumonias. Sometimes artificial feeding may be continued for weeks, months, or even years.

Occasionally we can succeed in introducing fluid food in the following simple manner: The patient is placed in a horizontal position, the head bent slightly backward, and held in this position, unless the resistance is too great, and the fluid is then poured directly into one nostril. As a precaution, we begin with a little water, in order to begin the proper movement of deglutition.

As a general thing, forced feeding is impracticable in private practice, and the patients requiring it should be sent to a hospital or asylum. Indeed we are now approaching the treatment of those symptoms which can only be carried out successfully in asylums. These include, above all, the tendency to commit suicide.

Such patients require special supervision and may not be left alone for a moment. The possibility of watching several patients of this kind is furnished by a ward in which orderlies are on duty day and night. In such wards every opportunity for carrying out the dangerous tendency must be wanting. Nails, hooks, projections on the walls and beds, sharp instruments (spoons should be used, rather than knives and forks) must not be permitted. The pa-

tients may not wear neckties or ribbons. Some individuals are so inventive as regards methods of committing suicide that they must be kept in a room which, apart from the bare walls, merely has windows (provided with fine wire grating or with very strong glass) and doors without knobs or latches. The bed must be removed, and even then the patient may attempt to choke himself with strips of clothing, or he may run his head against the wall. The latter plan rarely proves fatal, although fractures of the skull and cervical spine have been known to follow. Nothing then remains but to confine the use of the hands by means of leathern gloves or a strait-jacket, together with constant supervision in the "watching ward." In very rare cases we are finally compelled to tie the patient to the bed or to adopt chemical restraint, *i.e.*, to produce narcosis by injections. It is an important rule, however, that every patient who is in mechanical restraint must be constantly watched in order to prevent serious accident, as, for example, hanging by the bands of a loosened strait-jacket.

The tendency of the present time is the avoidance of all mechanical restraint, and it may be dispensed with if the attendants are sufficiently numerous and well trained, and if strong drugs are resorted to. In rare cases, however, it would be fanatical to dispense with restraint; for example, in cases of severe injury, in restless patients, which can only heal when rest is enforced. Or mechanical restraint may be necessary in conditions of exhaustion, because drugs would still further injure the exhausted nervous system. In incurable cases we may use chemical restraint, out of deference to the feelings of the family, but in recent cases there is danger of chemical injury to the brain. Finally, there are cases of uncleanliness, of smearing the fæces, in which at least the application of gloves becomes necessary.

Filthiness and a tendency to destroy things often compel us to give the patients unusually tough clothing, made commonly of strong linen which is fastened at the back.

Violent patients should use table utensils made of papier-maché, with which no serious damage can be done. The attendants must never be permitted to employ mechanical restraint without the order of the physician.

D. ASYLUMS AND THEIR ADVANTAGES.

A good asylum offers to curable patients an advantage which is not possessed even by hospitals, *viz.*, the opportunity for regular occupation, especially in the open air. Occupation is furnished in workshops and in all house arrangements which require cleaning. Females find sufficient to do in making clothes and in attending to the linen and to the wash. The fact that the physician possesses the power of compelling obedience to his orders greatly facilitates mild treatment. The force of example and of the uncomplaining obedience of a large corps of attendants and of numerous other patients usually prevents the newly arrived patient from rebelling against the discipline. The time for waking and sleeping and eating, of taking walks and of working, is determined by the physician, so that a patient, who is no longer able to manage himself, is forced, like the wheel of a machine, to follow its course. Even violent forms of excitement often disappear rapidly in an asylum because the patient rapidly learns that a strict, though sympathetic spirit of order, not his morbidly excited will, is the ruler, supported by external arrangements against which he is powerless. But in the best asylums the discipline is less effective than the medical treatment.

E. TREATMENT OF CONVALESCENTS.

There are very many cases in which the slow progress of recovery and very profound, although still morbid, homesickness have compelled a premature discharge from the asylum in order to prevent the danger of an exacerbation or even of suicide. Under favorable conditions at home, recovery in such cases usually is undisturbed, but

if these conditions entail new cares and worries, a relapse is soon unavoidable. In such cases it is the duty of the family physician, who is better posted than the asylum physician, to decide whether a return to the former conditions of life will be attended with more serious results than a longer stay in the asylum. Every excessive strain, such as the premature resumption of the former occupation, is dangerous.

The period of convalescence requires psychical treatment which may aid materially in accelerating recovery. Any delusions which may have been left over may now be removed by friendly objections, and occasionally by light jests. Some feel the necessity of receiving, from the physician, the constantly renewed assurance of the morbid nature of their ideas and feelings. Patience, sympathetic insight into the patient's personality, yielding without weakness on the one side, and firmness without obstinacy on the other side, must be the main features of the physician's activity. The disease is explained as a misfortune that may happen to any one, and the doubting patient will again acquire self-confidence and trust in the future. The convalescent follows the one who understands him, like a child seeking protection. The physician must listen patiently to his communications, and must for a time continue to be his mental guide. As a matter of course, the care of the body must not be neglected.

VII.

HISTORY OF PSYCHIATRY.

A. ANTIQUITY.

It was the most important result of the works of the Hippocratic school and its founder that, with the recognition of the physical basis of mental disorders, the first attempt was made to withdraw their treatment from the hands of the priesthood. In Greece and Egypt patients were received in the temples, where the supernatural influences of mysterious powers were combated by conjurations and magic remedies. The insane thus received protection against external injurious influences, but it is doubtful whether the treatment was otherwise beneficial. Mental disorders were regarded, as is shown by the use of the term melancholia and the constant administration of hellebore, simply as the results of morbid bodily conditions, especially of changes in the principal secretions, such as bile, mucus, etc. For this reason no sharp distinction was drawn between psychical diseases and diseases of the brain. As a rule, febrile delirium was included among the mental affections. The term phrenitis was applied to all violent, especially febrile, diseases which were associated with mental disturbances, so that it was approximately identical with what was called "nervous fever" by practitioners at the beginning of this century. For example, phrenitis included many cases of typhoid fever and also the irritative cerebral conditions of severe pneumonias.

On the whole, the treatment of the insane was nonstimulant and sedative; in the feeble-minded it was mainly gymnastic. It is a striking fact that hereditary predisposition was not considered or mentioned. Nor were the

changes in the skull which occur in the insane referred to, while many complicated and obscure morbid conditions were properly interpreted and explained. The brain was regarded as the site and starting-point of most forms of insanity, although their causes were sought in irritation by bile, mucus, and water.

The confusion of true cerebral diseases, febrile general diseases and psychoses, also prevented an accurate differentiation of the various forms of psychical disease. For example, the terms melancholia and mania were applied mainly to insanity in general. In accordance with this the treatment was quite uniform. The most important elements were cold and warm douches, rest, proper diet, and gymnastic exercises in the feeble-minded.

The prevailing opinions among the laity also agreed with such views. How correct and, in individual respects, profound were the theories and investigations of the Hippocratic school, is evident from the fact that much attention was devoted to the statement of Erasistratus that the area of the surface of the brain furnishes a measure of the mental ability; in opposition to this view the importance of the internal structure was maintained.

The Roman law early laid the foundation for the view followed by all subsequent legal authorities that an "insanus" may retain, under certain circumstances, control of his affairs, but that a "furiosus" requires guardianship. The decision concerning civil and criminal responsibility lay entirely in the hands of the judge.

Asklepiades of Bithynia (124 B.C.) was opposed, in a measure, to the doctrines of the Hippocratic school. In addition to measures of restraint, he also employed psychical treatment, especially music as a sedative. He attached great importance to baths and cold frictions, and was less in favor of venesection and confinement to dark rooms, which were recommended by all his contemporaries.

Celsus made important statements. He required that the treatment should be adapted to the peculiarities of each individual case. Baseless fear is to be relieved by

gentle speech, or by kind deceit; maniacs can occasionally be controlled only by blows; melancholia often yields to strains of music. As a rule the patient should not be embittered by contradiction. The most important object of treatment is to secure sleep; poppy and henbane are especially effective.

Soranus of Ephesus, who lived in Rome under the Emperors Trajan and Hadrian, opposed measures of restraint. He was also unreservedly opposed to whipping and to intentional intoxication of the patient, but favored general and local abstraction of blood. He attached the greatest importance to psychical treatment, to isolation under supervision, to the action of light, and the avoidance of irritation.

Aretæus of Cappadocia soon after advanced the scientific side of psychiatry. He recognized the crossed action of the nerve centres. He confined the term melancholia to the conditions which are so called at the present time, and regarded it as the primary form from which all others develop. He furnished excellent descriptions and considered the causal conditions, such as social position, mental work, and overwork. The chief importance in treatment was attached to drugs. After-treatment consisted of thermal, sea, and sand baths, sea voyages, and a sojourn in beautiful countries.

Galen (131–201 A.D.) distinguished primary cerebral diseases from those which are due to diseases of other organs, and also differentiated phrenitis from chronic disorders attended with depression or exaltation.

These constitute the most important steps in the development of psychiatry in ancient times.

B. MIDDLE AGES AND MODERN TIMES.

The decay of medicine during the Middle Ages allowed the achievements of antiquity in psychiatry to sink into oblivion. The knowledge of the physical basis of insanity disappeared more and more, the old idea of possession gained sway, and attempts at healing again fell into the

hands of the priesthood. Practical medicine maintained a precarious existence in convents. Superstition and religious bigotry struggled for the upper hand in the treatment of the insane. The devil was suspected everywhere, and it was regarded as an act of Christianity to oppose him by means of prayers and exorcism.

When violent and maniacal patients became too annoying they were simply sent out of the country. In many cities guardians of the insane were appointed, who were responsible for their care, or the family were held responsible. When this could not be done the authorities intervened, the expense being borne by the family.

Permission to consign the patients to the towers of the city walls was long regarded as an especial favor. Toward the close of the Middle Ages the increasing number of insane led to the erection of a special building in Nuernberg. In other places, at the most, a few rooms in a hospital were fitted up wherein restless patients could be kept in chains. Whenever circumstances permitted, the family was compelled to keep its insane members imprisoned. There were portable prisons, so-called stocks, which could be placed in any room.

The notion of the possession of the insane by evil spirits prevailed everywhere. In Basle and many other towns maniacs were whipped by the hangman in order to drive out the evil spirits. In non-excited conditions the symptoms of the disease were often regarded as sins, and were treated accordingly by confession, fasting, pilgrimages, and self-castigation.

The conditions were similar in other European countries with the exception of Spain and Italy, in which regular insane asylums are found in the last centuries of the Middle Ages.

The notion of demoniacal possession developed at this time into that of possession by witches. The witch processes were due mainly to the prevailing belief in devils and demons, together with the working of the Inquisition.

The influence of demonological views was so great that

even such distinguished men as Paracelsus and Plater opposed them very feebly with medical opinions; although the thorough anatomical knowledge of Plater brought him nearer to a correct comprehension of insanity than Paracelsus, who despised anatomy. The latter stated, however, that exorcism of the devil was useless, and he attempted to cure insanity by external cutaneous irritants, cathartics, and venesection. He regarded sleep as an important auxiliary and also made suggestions for a sort of psychical treatment.

Plater made a rather obscure distinction between demoniacal possession and natural insanity. Emotional excitement is to be treated at first by sympathy, advice, and persuasion, then follow threats and blows. He recognized the necessity of restraint in violent cases, but advises that at times the chains should be cautiously loosened.

Even Weyer, the most celebrated opponent of the notion of witches, did not deny the reality of the pranks of Satan and did not dare to attribute them to mental disease. He merely attempted to restrict the assumption of magical influences to rare cases.

The influence of Luther, who was a firm believer in the devil and the doctrine of possession, long prevented a proper appreciation of the trouble in Protestant North Europe; and until a late period in modern times the insane were persecuted as sorcerers and witches.

The hopeless condition of the insane who were sequestered in prisons is made clear by several descriptions which have been made known. Sometimes they were kept for years in cells which were destitute of doors and windows, with only an opening in the ceiling. Through this opening food and drink were lowered to the patient. His feet and hands were often chained to the wall. Gloves with iron rings were used to prevent suicide.

A certain degree of improvement became noticeable in the seventeenth and eighteenth centuries when the insane were admitted to houses of correction. Certain of the prisoners were compelled to dress, clean, and feed the pa-

tients. In exceptional cases greater freedom was granted to the insane, and thus various measures of restraint became unnecessary. As a rule, however, the poor sufferers were neglected, the prisoners mocked and gibed them, or they were confined as formerly to dismal quarters. Many physicians regarded restraint-chairs, to which the patients were bound, as a mild measure, because it protected them against the blows and harsher measures of the brutal turnkeys.

It was not until the beginning of this century that Langerman advocated the medical treatment of the insane in addition to mere detention. But the treatment long remained a cruel one. In addition to emesis, repeated catharsis, and cold douches with hundreds of pails of water, rotary machines played an important part. By means of a revolving chair the patient was rotated around his vertical axis a hundred times a minute, and vomiting often followed. The resulting exhaustion was regarded as sedation, and such tortures were supposed to possess indirect psychical curative powers. It was also thought that patients could be cured by placing them in a closed sack. The ingenuity of physicians in inventing new measures of restraint as curative remedies is hardly credible.

But gradually the opposition to the view that restraint is a curative measure in psychoses became stronger and stronger. The remedy threatened to be more harmful than its former application, which was only intended to render the insane harmless, because the increasing number of patients, and the growing notion concerning their curability, increased the zeal of the physicians. The apparent scientific foundation for the employment of restraint long preserved the system, although more humane views everywhere became more prominent.

C. GRADUAL REFORM OF PSYCHIATRY IN THE PAST HUNDRED YEARS.

1. *Erection of Insane Asylums.*

It would be wrong, however, to overlook the fact that along with these imperfections in the treatment and knowledge of mental disorders, important works on psychiatry appeared in many countries, together with notable improvement in the treatment and care of the insane. We cannot enter here into the scientific results. They were closely associated with the prevalent philosophical doctrines, and can therefore only be comprehended from a knowledge of the latter. Their external expression was found in the external arrangements, particularly the insane asylums, which appeared in Germany at a comparatively late period. For example, in 1645 a special asylum was founded in Florence, and at the beginning of this century Chiarugi of Italy carried out the most humane principles of treatment; he also gave instruction in psychiatry. In 1681 the first independent asylum for the insane in France was built at Avignon. In 1728 the first asylum was opened at Warsaw; in 1741, in Springfield, England. A little later the rudiments of an asylum were established in Wuerzburg and Braunschweig. In 1751 the Philadelphia asylum was inaugurated. In the same year the insane patients of St. Luke's Hospital in London were divided into curable and incurable cases. In German countries very slow progress continued to be made.

An illustration of the extent to which some physicians were in advance of their contemporaries is shown by the fact that in 1804 Glawnigs proposed that an asylum be erected in order that the insane might be enabled to do farm work. At this time Langerman of Bayreuth resorted extensively to occupation in the treatment of insanity, and employed mechanical restraint only in exceptional cases.

2. *Opposition to Mechanical Restraint.*

In France, Daquin was the first to oppose mechanical restraint in his writings, and Pinel was the first who dispensed with it in practice. He practised the treatment of the insane in Paris in a humane manner, and his writings were epochal in the progress of French psychiatry. But despite his efforts the treatment of the insane remained very poor, so that in 1818 Esquirol reported to the Ministry that the unfortunate insane were treated worse than convicts and that their condition was worse than that of beasts.

In the insane wards of thirty-three cities he found them living in the most damp and unhealthy buildings. They were clothed in rags and lay upon straw in order to protect themselves against the damp cold of the floor. With poor food and harsh treatment, without air or light, they were chained in places in which wild animals would not be kept. Although the Ministry, in 1819, forbade the use of underground cells and required rooms with windows, the condition was not much improved until the law of 1838 was passed.

In Germany, in 1817, Hayner issued a pamphlet which exercised great influence. His description of the abuses then existing is pathetic. He especially opposed the use of chains and of restraining-chairs, which impeded motion and often led to crippling of the limbs. He also opposed the view, which was supported by physicans, that corporal chastisement is useful in the treatment of the insane. He regarded the camisole as indispensable at times, but only for a few hours, during which time a nurse must be in constant attendance on the patient. This requirement will also be accepted by the most fanatic opponent of restraint.

In 1796 Tuke erected in York, England, an asylum for the abolition of unnecessary and cruel restraint, and this served at the time as an example of humane treatment. But no one dared to remove mechanical restraint entirely,

and half a century elapsed before all abuses were corrected, especially in some private institutions. In 1815 patients were found in a public asylum with an arm or leg or with both limbs chained to the wall; the chain merely allowed the patients to stand or sit upon a bench fastened to the wall. One unfortunate had an iron ring around his neck, fastened by a chain, ending in another ring; the latter could slide along a vertical iron rod, six feet in length, which was fastened to the wall. Around his body was placed a strong iron band, about two inches wide, which had, at each side, a round projection to enclose the arms and keep them firmly applied to the body. In this torture the patient had lived twelve years. He was only excited periodically, and during long intervals was comparatively conscious. Finally he was rescued by an official investigation.

Under such circumstances it is not surprising that the demands for the entire abolition of restraint became louder and louder. The no-restraint system required the introduction of other and humane methods of treatment, and redounded to the honor of its founder, Conolly. Wherever the old system was supplanted the difference in the results obtained became especially noticeable. Imagine, for example, the effects of restraint in partially paralyzed patients. They were tied down in large night-chairs, because otherwise they would soil themselves. Here they sat the whole day, and at night were placed, bound, upon straw. If they complained or shouted, they were quieted by blows. If we contrast this with the care now devoted to a paralyzed general paretic the advantages of the new system are seen to be considerable. Instead of restraint we employ baths, and soft bedding with frequent changes.

But the greatest advantages of the no-restraint treatment were shown in conscious patients. A friendly manner and quiet speech aroused confidence where formerly only fear and distrust prevailed. The patients willingly obeyed the orders of kind attendants. It has become

more and more evident that well-trained and kind attendants are absolutely necessary to the proper treatment of the insane.

As a matter of course there were great difficulties connected with the introduction of the no-restraint system, but it was soon found that noise and disorder rapidly diminished, and that periods of excitement ran a more rapid course. The removal of measures of restraint was found most useful in suicidal cases. The destruction of windows, bedding, and clothing became less frequent, because the attendants were more careful and attentive. Temporary isolation, however, was found necessary, usually without any notable resistance on the part of the patients, who felt that solitude was good for them.

The physicians themselves were compelled to have patience. But they found that scenes which, at first sight, appeared full of confusion and excitement generally resolved themselves into simple conditions if quietly treated for a few minutes. Violent conduct and threatening speech soon ceased if not opposed by irritability and displeasure. Patient, quiet admonition and evidence of self-control rarely failed to produce their effects. The same spirit of humanity extended to the attendants and patients. Thus the new system rapidly gained adherents. It was developed in detail and found new auxiliary measures in the different modes of occupation of patients. Every year brought new proofs of the utility of such principles in curable and incurable cases, and, what was most effective, the number of recoveries increased. Even in the first few years Conolly employed education as a means of cheering and quieting the patients in his asylum. Not alone did the uneducated enjoy the acquisition of new knowledge, but the recalling of former knowledge was a source of pleasure to the cultured and facilitated their recovery.

The possibility of dispensing entirely with restraint has been often demonstrated, but on the whole the carrying out of the no-restraint system has become largely a ques-

tion of expense. The few exceptions only prove the rule. In order to prevent abuse, however, we must hold fast to the rule that restraint is inadmissible in incurable cases, especially when constant medical supervision is wanting.

It must be confessed, however, that while the changes mentioned were adopted in English asylums, the treatment of the insane without measures of restraint did not at first meet with a favorable reception on the continent of Europe. But finally the results of no-restraint became so firmly established that the victory is now decided.

D. PRESENT TREATMENT OF THE INSANE.

The question whether curable insane should be separated from incurable cases has long been debated. As a matter of course, the mingling of recent cases with idiots, epileptics and filthy patients must exercise an injurious influence upon the former. The necessary differences in the arrangements for treating both classes of patients also led to the desire for separate asylums. In Germany institutions were accordingly erected for curative purposes alone, and in these the attempts at reform, which were necessarily attended with considerable expense, could be carried out more readily, while the old asylums were furnished with suitable changes for incurable cases. The comparatively frequent recoveries in the former class rapidly removed some of the former prejudices of the public. The increased cost of such asylums located in different places led to the erection of two independent asylums in the same place. Any errors in prognosis as regards curability or incurability could then be corrected very easily, and the patients could be transferred from one division to the other. In this way complete separation became impossible. It was found, however, that the partial mingling of both classes of cases was not so injurious as had been supposed, if care were taken to separate the excited and filthy patients from the quiet ones. The presence of some incurable patients was even found to be beneficial, in a measure, because it helped newly admitted patients in becoming accustomed

to the new order of things. Moreover, some of the old patients received a fresh stimulus from the recent cases which had just come from the bustle of the outside world, the discharge of cured patients permitted them to gain fresh hope, and thus became an incitement to renewed activity, the best means of cure. The chief element, then, is not so much the complete separation of curable and incurable cases, as it is the most humane treatment under the different external conditions.

Every insane asylum now possesses a medical superintendent and all the means for treating the sick. In addition the entire building should create an impression of comfort. Whenever possible the asylum should be placed not alone in a healthy district, but also in one which is full of natural beauties. It should be surrounded by large gardens, and when mechanical means of isolation are necessary this should be done, not by heavy bars of iron but by light railings or thick unbreakable glass. The rooms should be enlivened by comfortable furniture and pictures on the walls; pianos, billiard tables, and reading rooms serve for the entertainment of the patients. Occupation is made possible in numerous work-rooms, and in attending to garden work.

The more free the treatment became, the more evident it became that very many patients were capable and desirous of work. The former anxious seclusion from the outer world was found to be unnecessary, and the constantly increasing overcrowding led to the development of free methods of caring for the insane. The most extensive development was found in the farming colonies for males, associated with large institutions. These colonies are small farms, which are tended, in great part, by the patients themselves. Not alone does this afford a useful activity to the patients, but it also diminishes the cost of their maintenance.

Less extensive is the so-called family care, in which one or more patients are cared for in the family of a stranger. This is also known as a scattered colonial system. More

or less close connection with a neighboring asylum affords the possibility of using baths, and permits a return to the asylum whenever this becomes necessary. When such an arrangement is possible, the patients feel themselves very fortunate; they consider themselves useful members of human society, and notice that their morbid tendencies and ideas are recognized and treated as such. As a matter of course, it is assumed that such families are subject to regular supervision. The results are uniformly good, and the system merits further extension in Germany. It has been extensively carried out in Scotland and, for several centuries, in Gheel, Belgium.

SPECIAL PART.

I.

CLASSIFICATION OF INSANITY.

THE classification of insanity is the most difficult problem in scientific psychiatry. None has hitherto proven satisfactory, and my own classification undoubtedly possesses many defects. It merely attempts to furnish a rapid survey of the essentially different clinical forms of insanity.

Three plans of classification have been hitherto adopted, *viz.*, upon an anatomo-pathological basis, and upon the basis of the causes or the symptoms of insanity. All these systems have been artificial. Anatomical changes are absent in the majority of cases; so many causes act at the same time that it would often be arbitrary to regard one as decisive in the individual case; even the symptoms of insanity are sometimes so manifold that accidental matters may long conceal the essential elements.

But so long as we are not even able to explain the mental processes in the healthy nervous system, the attempt to circumscribe its abnormalities within a natural system will be unsuccessful. Nothing remains but a classification with the aid of the different artificial systems.

The relationships between different groups of insanity also appear in our classification and characterize their clinical course. But the artificial character of the entire system is shown, for example, by the fact that the curable forms of insanity are not only found among the simple, usually curable mental disorders, but that, like the forms occurring after intoxications and some forms occurring during fever, they must also be placed alongside the incurable forms of dementia. On the other hand, paranoia, despite its simple functional nature, is characterized, as a

rule, by a more unfavorable course, and yet must be placed alongside the other simple mental disorders.

Even the oldest observers made a fundamental distinction which is still maintained; it depends upon the predominance of a depressed or an excited mood. These moods may occur in all forms of mental disorders, either singly or alternating with one another. Hence, the first classification, which runs through all the individual forms of insanity, is that into depressed and exalted conditions, dependent mainly on disorders of emotional life, but always accompanied by disorders in the association of ideas; disturbance of consciousness may also be present in varying degrees.

Although we everywhere find conditions of depression and exaltation, yet certain groups of symptoms are known under the terms melancholia and mania. A disturbance of the association of concepts is also demonstrable in almost all cases; but in only a few clinically distinct groups do we apply the term paranoia, which includes the terms "verruecktheit" and "wahnsinn" and the secondary confusion. A few subdivisions readily result from the combination of disorders in the connection and course of the concepts with disorders of consciousness, especially of the perceptive processes.

The separation of so-called hallucinatory psychoses has been attempted anatomically as well as clinically, but is not yet practicable. For the present it seems better not to regard hallucinations as independent diseases, but merely to examine their relations to the clinical history of the psychosis.

The symptom-groups of melancholia and mania and their periodical alternation, and paranoia form one main group of simple mental disorders, which is distinguished from the group associated with permanent anatomical or general diseases. The simple mental disorders are generally to be regarded as probably curable; the affections belonging to the second group are, in great part, incurable. The simple or functional disorders may also be attended

with more profound anatomical changes and pass into the more unfavorable forms. Hence our classification can only be regarded as a temporary makeshift. This is shown most clearly in the position of dementia in our system, which forces us to place the simple disorders that terminate in imbecility and dementia in a special sub-group of the second main division because its occurrence is attended very often by distinct anatomical changes in the brain. Primary dementia is also placed improperly in the same group, in order that the similar clinical histories should not be separated. Still more forced is the position of congenital feeble-mindedness, so-called imbecility, in the same group, because, although anatomical changes in the structure of the brain are undoubtedly present, they are not yet accessible to our gross methods of examination. The discussion of imbecility cannot be separated, however, from that of idiocy and other forms of feeble-mindedness.

The second main group also contains the practically important forms of dementia with paralyses, especially dementia paralytica proper, then the psychoses associated with epilepsy and other general neuroses, among which the nervous exhausted conditions of recent times constantly occupy more and more space. The addition of alcoholic forms, although apparently at variance with an artificial system, is permissible because they serve to indicate that we have to consider, in mental disorders, not alone psychological or anatomical causes in the central nervous system, but also chemical changes in the entire body, as a matter of course including the central nervous system.

II.

SIMPLE MENTAL DISORDERS.

A. MELANCHOLIA.

THE chief characteristic of melancholia is a sorrowful mood of varying intensity, more or less associated with disorders of consciousness, and of the association of ideas. All of these together, but chiefly the disorders of emotional life, give rise to the morbid manifestations of the volition and acts of the patient. In the simplest form of independent melancholia the depressive affects and feelings or the anxious mood occupy the foreground. There is a gradual transition between conditions of dissatisfaction and bad temper without sufficient provocation, and this simple melancholia. If such feelings permanently dominate the mood, then further disorders of the mental processes follow. The patient notices that his ideas run a slower course, that alongside the painful contents of his consciousness there is no room for other thoughts. At first he feels with pain a growing indifference to those around him, but gradually this is lost and the painful feelings suppress all other concepts or give to them the same painful color. Not alone has the former enjoyment of society and intellectual pleasures disappeared, but the satisfaction in his own occupation disappears in a striking manner. From these beginnings develop the different forms of melancholia.

At first there is often a distinct feeling of being sick, the patient sometimes endeavors to conceal the change in his tendencies and feelings. The unnatural character of his sensations and his distaste for things formerly held in high esteem, often lead him to complain that he can no

longer enjoy anything. He feels himself torn out of his former community with men, he is filled with mistrust and suspicion, and thus resists all external impressions. A sensation of changed individuality constantly oppresses him. Although he still acknowledges that some of his anxious notions are false, yet it is impossible for him to feel, think, or act differently. The loss of self-reliance becomes more and more distinct, accompanied by true spiritual pain. He seeks solitude, becomes silent or merely states that everything around him has changed. Relatives and friends appear to act differently, he does not deserve their care, he is too wicked. The world has become dead to him. The things occurring around him, even his own experiences, are felt by the patient as by an outsider. Every attempt to influence him leads to a painful disturbance of his concepts. Very irritable individuals, especially women, soon acquire obscure notions that injury is to be inflicted upon them, or every cheerful remark increases the sorrowful depression into apathetic brooding or impulsive acts, which are intended to relieve the distressed ego of the patient.

The contents of consciousness are not always confined to these anxious concepts; a well-preserved memory furnishes new food for self-torturing thoughts. These thoughts run a slower course and are associated solely with the fundamental mood; the external perceptive processes are delayed. Voluntary attention is hardly possible or is very fleeting.

With the further development of the disease certain ideas appear unsought out of the general feeling of depression and present themselves to the patient as an explanation of his sufferings. No conscious logical selection permits the development of these explanations, but the entire previous contents of consciousness are again lived through, and any part thereof may come in contact with the present feeling. It is surely no accident that, in very many cases, this connection is afforded by religious ideas, because these adhere firmly to the mind in earliest youth.

In a feeling of despair the patient seeks refuge in religion, but he can no longer pray, and doubts concerning the firmness of his own belief increase his notion of wickedness to a morbid height. The Bible is read, but no comfort is found; only texts which he refers to himself. Great influence is exerted by those writers who discuss the unpardonable sin against the Holy Ghost. Its very obscurity is dangerous to the melancholic patient, because he is apt to find, in his own life, some circumstance which may be interpreted as such a sin. Sexual aberrations are especially apt to enter this circle of thought. Other self-accusations concerning sins that have been committed are also frequent, but they usually remain general in character. The patient fears that he has forfeited salvation, and that he is doomed to eternal damnation.

Others believe that they are victims of human justice, they dread the prison and capital punishment. A patient suffers terror of soul, like a criminal after a heinous crime. These general reproaches are usually gradually, but sometimes immediately, converted into a special notion which is the starting-point of new melancholic complaints. This change is a serious one, and proves, at least, that recovery will not occur rapidly. It may also arouse doubts concerning the diagnosis, inasmuch as the delusion of persecution, of "verruecktheit," has much similarity with these conditions. A knowledge of the course of the disease alone will prevent a mistake. The chief feature is the affect of melancholia. Moreover, ideas of self-aggrandizement are hardly ever wanting in "verruecktheit," while the melancholic usually has lessened notions of his own worth.

The clinical history changes when hallucinations develop. They usually bear the impress of the depressed mood, and their sensory distinctness removes every doubt which may have existed. Voices threaten death and damnation. The sound of shooting or of bells is connected with the idea of execution. Shapes and shadows frighten and threaten. The patient sees himself surrounded by

flames or hell, and abysses open before his feet. He smells corpses and tastes poison in his food. The clouded consciousness mistakes harmless words and sounds for dangerous influences. A dull pain in the head becomes a proof of profound disease of the brain and impending death. The terror-filled fancy finds in all perceptions a confirmation of its fears. The sympathy of relatives seems like an attempt to conceal a new misfortune or danger.

These different symptoms appear in varying degrees and combinations, so that the manifestations of simple melancholia may be very manifold. A materially different picture is presented when the feeling of fear enters the symptom-group. This feeling is referred to the cardiac region (prækordial fear), and is one of the most important and frequent accompaniments of severe melancholia. The external quiet of simple melancholia becomes converted into anxious restlessness. From the start sleep is almost always disturbed because the patient is tormented by the pressure in the cardiac region; other disagreeable sensations soon follow, such as constriction of the neck or a dull feeling in the head; bad dreams and anxious thoughts become more numerous. The daily work may make the condition endurable during the day for a time, but in the stillness of night it is rapidly intensified, and if sleep does not refresh the excited brain, the days likewise are filled more and more with disheartening fears.

The implication of the organs of the body is much more distinct in anxious than in simple melancholia. The appetite is lost, the nutrition is rapidly impaired. Respiration is superficial, the heart's action is accelerated and often irregular, the pulse is small, the skin cool. When the terror shows variations or occurs in paroxysms, its increase is shown by suppression of the urine and perspiration, its subsidence by increase in these secretions. The more chronic the prækordial fear the more indistinct do these symptoms become.

General restlessness soon makes its appearance. The

patient can no longer remain in one place; he runs about the room, sits down, rises, goes out of doors, always with the indefinite, but unfulfilled hope that the change may relieve the terrible restlessness.

Although confined to a few anxious concepts, the flight of ideas may be accelerated. Delusions may now develop, intensified by hallucinations. Religious notions are often awakened, and are then explained as the dread of being possessed by evil spirits. With the increasing terror the consciousness is gradually impaired. Perception of the outer world takes place only with reference to the dominant affect.

The affect is shown more and more distinctly in the facial expression. The facial muscles become rigid and unchangeable folds appear; the brow is furrowed, the angles of the mouth drawn downward, the mouth often appears wider, almost quadrangular, the lips are gently moved to and fro. In the higher grades anxious moaning and sighing accompany the unchanging complaints and exclamations. One pleads for mercy, the begs other that he may be spared or perhaps that he be burned to death, despite his fear of this agonizing fate. The contradiction is perhaps only apparent because the terror is so dreadful that even burning to death appears the lesser evil. This condition may last weeks and months. The patient clings to every one around him and force is often required to remove him. Then the unfortunate wrings his hands, beats his head, tears the skin of his face and hands, tears his hair, and is constantly inflicting slight wounds. The restlessness may increase still further to inarticulate shouting, unceasing running about; the patient cannot be dressed or undressed without force. It is only during a temporary subsidence of the terror that we occasionally hear expressions which permit us to recognize that the despair is associated with the former psychical processes. Soon the terror again conceals these processes, and only the later reports after recovery prove their continuance.

Now come the impulsive manifestations of the tortured

ego and acts of violence, which must be regarded as discharges of the terror-laden consciousness. Suddenly the patient destroys everything within his reach. Not infrequently he mutilates his own body; tears out his eyes, cuts off the genitalia, etc. Sometimes a leap into the river or out of the window closes the dreadful scene. Such acts are sometimes due merely to the endeavor to relieve the condition of internal tension. We then find impulsive actions, which are inexplicable even to the patient after recovery has taken place. This one kills his parents or children, another kills his wife. The sight of a knife makes the thought and deed one. This so-called raptus melancholicus is perhaps not so dangerous in anxiously excited patients because, as a rule, they are sent early to an asylum. But these sudden discharges may also occur in patients who were apparently quiet. Especially dangerous in this respect is melancholia in which, for a long time prior to the act of violence, the patient may have remained motionless or even rigid.

Attacks upon surrounding individuals, self-mutilations, and attempts at suicide serve the involuntary purpose of freeing the patient from his intolerable position. In fact, after such acts they feel relieved, as a rule, and this may even be followed by recovery. The profound disturbance of consciousness at the time permits only an indistinct remembrance of the deed, so that remorse is not increased by memory. Moreover, he is often apt to regard himself as the unresisting tool of a higher power.

The attacks of præcordial fear usually develop suddenly; more rarely they are preceded by oppression, headache, and vertigo. They may be repeated at short intervals or after the lapse of years. In the intervals the depression may be distinct or it may be so slight that the patient appears healthy amid the accustomed surroundings. As a rule, the more violent the attack the more permanent is the subsequent quiet, but there are also cases in which the act of violence precedes the following symptoms.

A disease which began as simple melancholia may lead

to a materially different symptomatology. Slowly or rapidly there develops a rigid absorption in the internal mental processes (stupor). The disorder of consciousness is not so profound as it appears, as is shown by the fleeting mimic movements, wrinkling of the forehead, twitching of the lids, an anxious gaze. A sudden change of color or a deep sigh shows that the motionless patient is filled with anxious thoughts, and convalescent patients confirm this opinion. In more severe cases the internal life of such patients becomes a real dreamy condition, in which external impressions are received in a confused, shadowy, and inimical manner. A terrible, baseless, but paralyzing fear takes possession of consciousness and makes every movement impossible, while at the same time the frightful consciousness of inability to act or to will increases the terror tenfold. These patients sit as rigid as a statue, with an anxiously astounded or rigid, mask-like expression. But they do not always neglect the care of their immediate bodily necessities. It is only in the most severe grades that they are unable to dress themselves, keep themselves clean, and take food alone. These acts are continued for a long time, although slowly, and show that the patient at least perceives the internal processes of his own body. Sleep is usually disturbed very much and often there is complete insomnia, although the patient lies quietly in bed.

In these conditions the concomitant symptoms of melancholia appear more distinctly. The speech may exhibit striking changes. In simple depression it is slow, infrequent, and monotonous: the voice sounds muffled, while the timbre varies according to the degree of fear, from a gentle tremulous voice to shrill outcries and violent moans and complaints. In anxious excitement the speech becomes more rapid but retains a peculiar tremor.

The loss of sleep, which is common to all forms of melancholia, is often followed by painful, or at least annoying, sensations in the head, such as pressure at the vertex, tension of the occiput, or a feeling of emptiness which is

sometimes translated by the allegorical expression that the brain has disappeared or that the soul is lost.

Neuralgic pains are rare; the apparent analgesia in conditions of great fear and impairment of consciousness must be attributed to the lack of attention.

Digestion is constantly impaired in melancholia. It is possible that a gastro-intestinal catarrh may give rise to a refusal to take food through the agency of a secondary delusion, but, as a rule, such refusal develops independently out of psychical motives. Constipation is very frequent, but this may be preceded, more often it is followed, by distinct evidences of gastro-intestinal catarrh, undoubtedly due to the insufficient secretion of digestive fluids. The clearest evidence of the imperfect digestion and absorption of food is the rapid diminution in the weight of the body at the beginning of melancholia. After the severe forms of melancholia have lasted for some time, even if food is not refused, general emaciation and exhaustion may proceed to a fatal termination. Even forced feeding is useless when the exhausted nervous energy is powerless to stimulate digestion.

Refusal to take food in consequence of delusions is one of the gravest symptoms of melancholia. It is rarely associated with the intention to put an end to life by starvation, but the patients complain that they have lost their fortunes, and refuse to take food because they cannot pay for it or because they are depriving others of food.

The secretory activity of various organs is affected. Tears do not flow, perspiration is usually suppressed, the skin is dry, the hair and nails become dry and brittle. Apart from the attacks of fear, the urine is small in quantity; thick, tough saliva sometimes flows from the corners of the mouth.

Menstruation is disturbed, often absent. Sexual desire is usually abolished, but obstinate masturbation is sometimes observed in profound impairment of consciousness.

Respiration, whether slow or accelerated, is always superficial. There is often general anæmia from the start,

and this increases with the further course of the disease. The diminished activity of the heart is soon shown in various ways. The face, hands, and feet are slightly swollen, and these parts soon become bluish in color, like certain of the mucous membranes. The hands and feet are apt to be cold to the feel, while the internal excitement is manifested in the face by heat and sweating of the forehead. The pulse is generally small and tense, but it changes with the variations in the primary affect.

One striking symptom is observed in all forms of insanity, but is especially frequent in melancholia, *viz.*, a sudden change of mood. In the midst of the depression a temporary cheerfulness suddenly appears, more frequently during the development and subsidence of the disease than at its height. With the return of the depression the cheerfulness is often converted into self-reproaches and proofs of the patient's own perversity and wickedness.

Melancholia usually runs a very slow course, lasting at least months, and occasionally years; in very rare cases it lasts only a few hours, but hallucinations or delusions are then necessary for diagnosis. The development of the disease sometimes takes place by fits and starts, and frequent changes in the severity of the symptoms are common in all stages. These may be due to sudden changes of temperature, the onset of the menstrual period, even the growing darkness of twilight aggravates the symptoms in some cases.

Moderate grades of melancholia with periods of notable improvement may last many years. Such patients can usually maintain their position in their accustomed surroundings. After a time the family attaches little weight to their complaints, and to the occasional threat of suicide. Even in this apparently slight degree of development of the disease there is great danger of suicide. A suddenly developing præcordial fear compels a discharge through the medium of an act of violence, and the danger of suicide should not be forgotten, at least by the physician.

Every melancholia may become chronic. The more

violent sypmtoms often subside; the hallucinations become less vivid, the delusions fall into the background, the external restlessness is lost; the patient may even resume an occupation in which no responsibility is incurred. This condition may last for years, especially in an asylum, without passing into recovery.

In other cases of chronic melancholia the symptoms lose none of their violence, but the delusions and their manifestations assume a somewhat stereotyped character and may be repeated like a machine; the rigid or anxious expression becomes ingrained; the same complaints are repeated in the same way. The stupor may last for years until death, but more frequently the tension is somewhat lessened; the consciousness becomes clearer, although the patient does not gain a clear insight into his disease. He remains apathetic and incapable of mental effort, and the melancholia may continue in this stage until the end of life. He has no sympathy for his family, and the sorrowful mood is still dominant.

The transitions into recovery will now occupy our attention. At the end of three to six months the symptoms, as a general thing, gradually subside and give place to the normal condition. Sleep first improves, then the attacks of fear become less frequent and violent, the facial expression gains life, and sympathy for the family begins to be manifested. The patients begin to talk, gain appetite, and show more and more of their former individuality. Gradual improvement is more durable than sudden improvement, which is very rare. Certainty of recovery can only be entertained when the mental improvement goes hand in hand with physical improvement. As a rule, this takes place very rapidly. On the other hand, a return of physical improvement, without notable mental recovery, leads us to fear the development of dementia. Another important point is the self-knowledge of the morbid character of the affection, which generally appears with advancing recovery.

Although gradual improvement is the usual event, yet

the changing symptoms of anxious melancholia and the severe phenomena of stupor are exposed to many variations during the period of convalescence, although they may terminate in complete recovery. These patients sometimes manifest a temporary increase of the feeling of well-being before complete equilibrium is established. On the other hand, the improvement may be concealed by a rigid demeanor, until finally this exhaustion of the entire nervous system gives place to complete recovery.

The degree of insight, after recovery, into the morbid character of the disease depends materially upon the degree of culture possessed by the patient. While the cultured individual recognizes the melancholic condition as a morbid mental state, the uncultured patient understands with difficulty that he has suffered from a disease and speaks of dreams and fancies that tortured him.

Death may result, with comparative rapidity, after violent conditions of anxious excitement, as a result of the complete exhaustion and insufficient supply of food. A series of dangerous diseases develop with comparative frequency in these conditions, for example, pneumonia, and surgical fever following wounds, which it is difficult to treat on account of the patient's restlessness. In simple melancholia and stupor pulmonary tuberculosis is a frequent complication.

Finally, the termination in dementia must be mentioned, although it is not frequent. It is true that there are numerous protracted cases in which a certain grade of mental weakness develops, particularly in the ethical domain, but the intellectual functions are usually intact for a long time and their entire loss is not frequent. The best measure is the patient's ability. Although independence of a high grade does not persist, we find among chronic melancholics many who, under proper guidance, are able to do so much that they cannot be regarded as demented.

In general the prognosis of melancholy may be regarded as favorable. Much more than half the patients recover, and often regain a certain grade of mental ability. He-

reditary taint or previous injury to the skull with cerebral concussion are unfavorable factors. If the exciting causes, such as grief, pecuniary trouble, nutritive disorders of all kinds, can be removed, the prospects of recovery are increased. The age of the patient is very important. Childhood, puberty, and old age are more endangered than vigorous youth and adult life. Melancholia is most frequent at the period of sexual development and hence it is especially frequent at this period in females, in whom the sexual life affects the mental processes so deeply. The disease is not much less frequent in old age, and some observers even maintain that its frequency then exceeds that during the developmental period. The period of involution of the body brings melancholia to an especially distinct expression. The women are again attacked more frequently on account of the changes induced by the climacteric. There are still other causes which increase the number of cases in females, *viz.*, pregnancy, childbed, and nursing. The latter forms do not differ, as regards symptoms, from those already mentioned, so that it is superfluous to speak of puerperal melancholia as a special form of disease.

It is a point of great practical importance that a melancholia which develops in a brain that is less capable of resistance on account of hereditary or acquired taint, differs in some respects from melancholia developing in a previously healthy brain. In the former event there is often a mixture of morbid and normal elements. This may deceive the inexperienced observer, especially as the patients have a tendency to justify their conduct by reasons, to attribute their mood to sorrowful circumstances. The below-par condition of the brain and entire nervous constitution give rise to the course of this form of melancholia which is also called constitutional. It would be better, however, to lay stress on the attempts at justification and to call the disease a folie raisonnante in a melancholic form. These cases occur chiefly in women. Their dissatisfaction and irritability lay them open to the danger

of being misunderstood. They are not alone morose but incapable of work; they are especially annoyed by repeated reproaches and are then regarded as quarrelsome and malicious on account of the changes from a depressed to an angry mood. When such excitement, which has been added from the outside, has subsided, the patient feels so much unhappier. This increase of the painful affect terminates occasionally in suicide.

The chief element in the treatment of melancholia is to obtain mental and physical rest for the patient. The physician must make the family recognize at the start that the patient's conduct is the unavoidable result of a morbid depression. Distraction by means of travel, entertainments, etc., is to be avoided by all means, and inactivity is the only proper treatment at the outset. As the family can rarely be induced to follow such advice, independent melancholias, as a rule, should be transferred to an asylum as early as possible. This is not so true of the melancholic conditions with which other psychoses begin. If the patient cannot be transferred, we should advise the family to be as unconcerned and cheerful as possible, neither to oppose nor to accede too much to the patient's complaints, but to attach the chief importance to the performance of the numerous little acts which fill out the family life. A quiet pressure of the hand does more than an hour's conversation. The more simple and natural the care, the less design does the patient see therein, and the better for him. But unfortunately it is usually impossible to be uniformly quiet and sympathetic for months, when the individual's own heart is bleeding for the patient, and then again the other injurious influences of the outer world cannot be entirely excluded in the family. The simplest method of obtaining the desired rest for the patient is to keep him in bed. This removes him from the injurious influences of his work and of evidences of excessive tenderness, and at the same time secures the necessary rest for the body. Mild cases, however, generally refuse to go to bed, and in these

special cases we may occasionally permit a change of scene, under the care of a good nurse.

As a general thing, however, such measures are insufficient and asylum treatment is indicated. This becomes absolutely imperative whenever we have reason to fear suicide, acts of violence of other kinds, or a refusal to take food. In truth every melancholic must be regarded as capable of committing suicide, and although this suspicion must not be carried too far—the rest of the family should not act as spies upon the patient, because the home conditions cannot prevent a well-planned suicide—yet the physician must never lose sight of this danger and must transfer the patient to an asylum in time.

If the patient must remain at home, it is to be remembered that attempts at suicide are made chiefly in the early morning hours. If constant supervision is impracticable, then the patient's hands must be restrained mechanically. Nobody will deny the necessity of such measures when a physician or asylum aid cannot be quickly secured. But then it becomes the duty of the physician to insist upon immediate admission to an asylum.

Next in importance to mental and bodily rest in the treatment of melancholia is the regulation of sleep. Usually the physician resorts at once to the administration of drugs. But it must be remembered that the patient may not take medicines on account of the fear of poisoning, and on the other hand their continued admintstration during a long illness may prove injurious. As a matter of course, a sedative must be occasionally given if we must quiet temporary excitement in order to render possible the transfer of the patient to an asylum. But this is a form of restraint and is not a curative measure. We may speak of medicinal treatment only when a drug is given according to some definite plan, not when it is used now and then to combat individual symptoms. Above all, the physician should not make experiments with any of the innumerable new drugs, whose action is still imperfectly understood. The number of tried remedies is small.

The best sedative and hypnotic in melancholia is morphine or opium. In solution morphine may be given unnoticed in the food; when the patient becomes suspicious, hypodermic injections may be used. The regular daily dose of one to two centigrams will suffice, and more than three centigrams should hardly ever be given. Combined with 2.0 grams chloral hydrate at night, morphine is an effective hypnotic, while chloral alone is much less useful and after a while produces disagreeable effects (headache and dulness during the day). In females, opium appears to act better than morphine. Protracted anxious restlessness of moderate degree and general anæmia indicate the use of opium. This is given in powder, at first two centigrams two or three times a day, and then increasing in a few days to two or three times this amount, until notable sedation is effected.

In special cases other remedies may occasionally be resorted to, and we refer to the article on general treatment. We may here mention the use of mild alcoholic drinks, such as beer, wine, or punch. Prolonged warm baths are very serviceable, and may be replaced occasionally by wet packs. In severe excitement and præcordial fears the last method has very little effect, and we must then resort to more rapidly acting remedies, particularly to morphine.

The more severe the disease the less effect will be produced by direct treatment with drugs, and the chief attention must then be paid to the nutrition and hygienic measures. The necessity of artificial feeding is always a decisive reason for bringing the patient to an asylum. When food is freely taken, it should be as nutritious as possible. All the organs must be carefully examined, and any diseases which may be present should receive appropriate treatment. The immobile melancholic must be led around a good deal in the open air, the anxiously excited patient should be kept in bed. Both must receive frequent baths, both for purposes of cleanliness and also to stimulate the activity of the skin and heart. During convalescence, but only at that period, the patient may receive the com-

DESCRIPTION OF PLATE I.

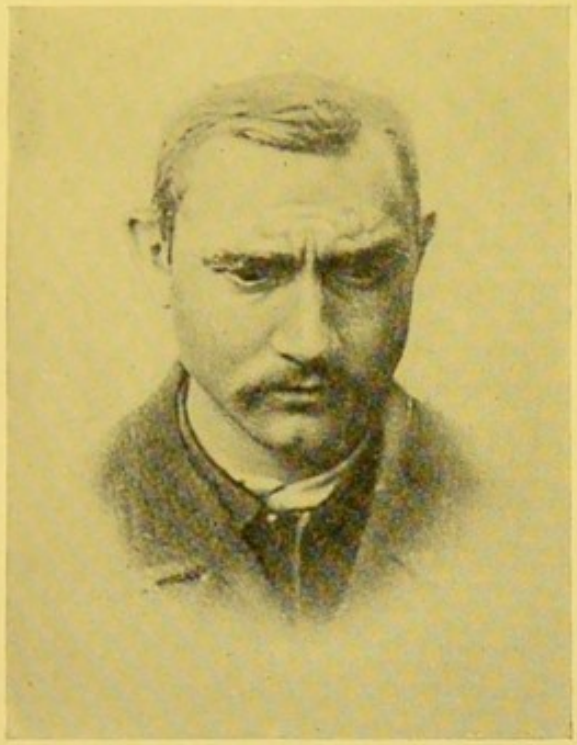
COMPARISON with the exposed facial muscles in an anatomical atlas is advisable in examining these plates.

MELANCHOLIA.

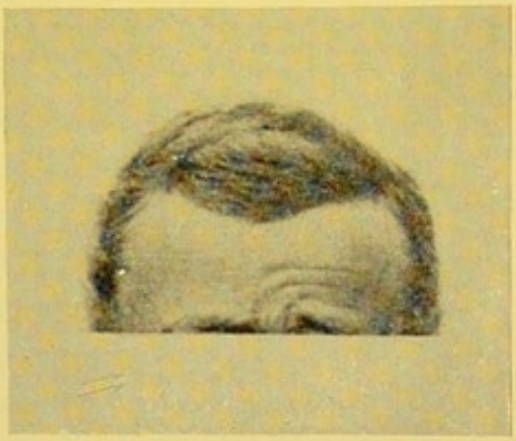
Upon the brow of the young melancholic who dreads decapitation is seen distinctly a horizontal fold of the frontal integument, only in the middle above the root of the nose. This restriction of the contraction of the frontal muscle to its middle bundles is very common in the expression of grief, but the brow of the man to the right and above exhibits complete transverse furrowing; this was also a true profound melancholia.

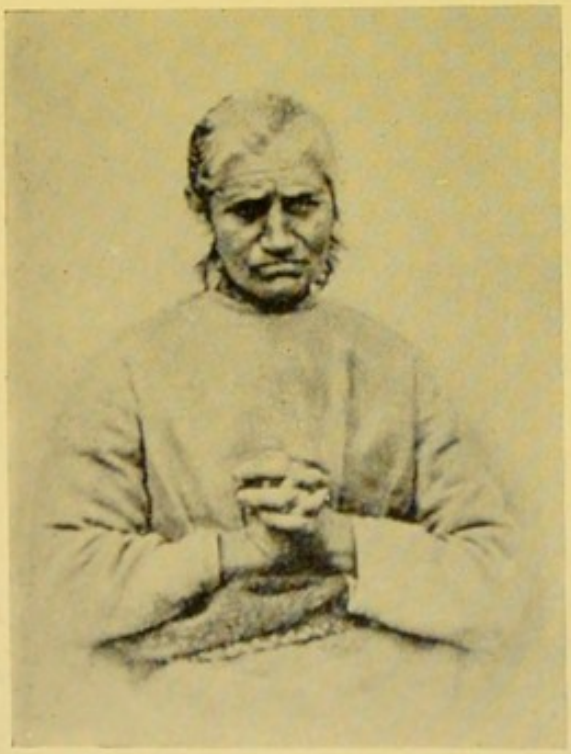
Other muscles also act to produce the expression of grief. The two corrugators bring the eyebrows closer together, and hence vertical folds form over the root of the nose. But as the frontal muscle often acts more strongly upward, the inner extremity of the eyebrow is occasionally raised; this is shown very well in the lower half figure, in which the forehead is wrinkled only on one side (this was not taken from a melancholic patient). Then the upper lids, which usually hang down flabbily, also appear curved. This is also effected by contraction of the orbicularis palpebrarum, which at the same time causes wrinkling of the skin of the outer angle of the eye (compare the picture of the woman on the right). The combination of the contraction of the three groups of muscles mentioned produces the careworn expression of the upper half of the face; perhaps the pyramidal muscle of the nose also takes part by its lessened activity, because the antagonistic middle bundles of the frontal muscle may then act more vigorously in an upward direction. At all events, the resultant right-angled furrowing of the forehead is to be regarded as a sign of melancholia.

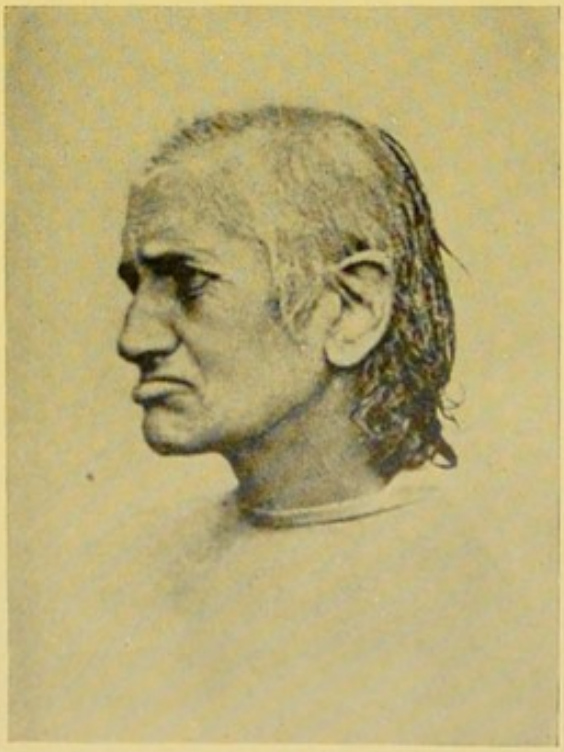
A less constant feature, but one which materially increases the melancholic expression, is the marked character of the naso-labial folds. This, almost alone, imparts a sorrowful appearance to the lower half of the face in the picture of the woman, but that expression is due mainly to the drooping of the angles of the mouth and the protrusion of the lower lip. This woman had torn the hair from her head in her great fear; the folded hands intensify the general anxious expression.











forts of religion. At this time positive psychical treatment is again indicated. Terrifying delusions may now be shaken by reasoning. Even if logic is not of much avail, the convalescent is thankful for the well-meant efforts, and he regains more rapidly the necessary self-support if he feels himself aided by others.

Should a convalescent melancholic be removed from the asylum as early or as late as possible? Usually the family physician needs to exert his influence against too early removal, because the danger of suicide in unexpected attacks of fear may again be encountered. Complete recovery alone furnishes full security. In individual cases, however, an early removal may be advisable. If a family thereby secures its support so much earlier, and if the patient derives satisfaction from providing for those dependent on him, if a satisfactory activity awaits him at home, then his dismissal from the asylum is indicated. It may also be desirable to place a well-to-do patient under better climatic surroundings than he will find at home. If he recovers entirely in some other locality, his return to his former pursuits is facilitated in view of the prejudice against patients who have been in an asylum. If the patient has furnished proof of his recovery under other conditions, he is received at home with greater confidence. The family should receive him as unconcernedly as possible, and should act toward him as toward his former self. Hence they may speak concerning his disease, because he does this willingly and manifests gratitude for the care and kind treatment bestowed upon him. If a melancholic returns home quiet, but not recovered, he must be treated as a patient and treated in the manner already indicated.

B. MANIA.

A morbidly elated mood constitutes the fundamental basis of mania, varying from slight cheerfulness to violent rage. It is accompanied constantly by an accelerated flow of ideas, and by more or less accelerated conversion

of conditions of mental excitement into acts, while disorders of consciousness, including hallucinations, usually appear only in the higher grades of the disease. Stress should be laid on the fact that in mania, which occurs independently, the symptoms all develop upon the same morbid basis, not alone in psychological dependence upon one another. For example, the cheerful mood does not depend upon the facilitated flow of ideas. It is probable that congestion and disturbed chemical changes in the cortex form the common anatomical basis. Mania has an organic basis, although this cannot often be demonstrated and it is therefore customary to call it a functional disease. The greater the lack of inhibition of the mental processes and the resultant actions, the more the originally cheerful mood is converted into a violent, indeed angry excitement, in which there may finally be an impairment of consciousness.

The prodromata of mild maniacal excitement are accompanied quite constantly by a sorrowful mood, which may be regarded as an expression for the feeling of the newly developing irritant, which appears foreign and incomprehensible to the patient. Sometimes this melancholy phase cannot be distinguished from a mild, independent melancholia. The patient is quiet, depressed, suffers from general malaise, insomnia, attended with digestive disturbances and emaciation.

In a few weeks these symptoms disappear, and the patient believes the threatened danger is past, especially as the renewed enjoyment of work and the more cheerful mood are attended with a better physical appearance. But it soon becomes evident that this is merely the beginning of a series of morbid phenomena. The first striking feature is the increased talkativeness, and the greater interest in surrounding affairs. The patient makes numerous calls upon friends and strangers; the conversation is one-sided—an answer is not demanded or expected, but given by the patient himself. The facilitated association and accelerated flow of ideas permit witty and surpris-

ing turns of conversation, which under other conditions must be sought with difficulty. The formerly modest individual suddenly becomes eloquent in society; after dinner he makes impromptu poetical remarks, and is admired by the majority on account of his new talent. If the thread of conversation is occasionally lost by him, this is usually excused, in a merry company, by the influence of wine. Indeed, the cerebral irritability is early shown by the fact that very small amounts of alcoholic stimulants are sufficient to produce excitement.

In daily life, however, the eyes of those around the patient are rapidly opened. The restless activity and the feeling of constantly increasing abilities lead the patient to form plan after plan, although none is carried to completion. In addition, he writes numerous letters; their form enables us to detect the rapidity of their production; large letters run rapidly in bold curves across the paper, underscorings are very numerous, and the contents correspond to the flow of ideas, although the restraint of the slower writing-concepts still curbs the contents to a certain extent.

Even at this time many are mistaken and admire the patient's bold thoughts, despite various offences against propriety which he commits. Nor can it be denied that the fancy of mild maniacal excitement may be an attractive phenomenon, although it furnishes little real power of imagination. It must be remembered that the mental activity of the patient does not run in the customary tracks; that, as a rule, he does not care whether he is regarded as cranky or peculiar, and that he has lost the finer considerations of social propriety. His imagination acts without object or restraint. He sees his ideas arrange themselves involuntarily, according as they are aroused by impressions of this or that sense. At times, the patient's look indicates a condition of poetic inspiration, and, after his recovery, he may relate wonderful dream-like experiences.

In mania we can follow the paths along which ideas

and words are mentally combined, because conscious selection is absent, and the patient is left involuntarily to the play of his thoughts. The careful consideration of speech in mania throws some light upon this form of association of ideas. There are two different methods of association, one according to the sound of the words, the other according to the relationship of ideas. Thus, a patient who hears the ringing of a bell, begins to rhyme with words like well, dell, sell, hell. In the other method the name of a person which reminds the patient of the idea of a fish, rapidly gives rise to ideas of shell-fish, oysters, fisheries' exhibitions, etc. As a general thing, both modes of association are employed. The patient says this house is made of wood and stone; wood is an article of fuel; the fire is hot, etc. On account of such jumps the accelerated flow of ideas often, apparently, loses its internal connection, but the consideration of the mode of speech shows us that this so-called flight of ideas does not occur entirely without internal connection. But our knowledge of the connection of the thoughts is entirely unsatisfactory, and we can detect only small bits in the structure of the thoughts within the patient's mind. As in dreams the boldest flights of thought pass across our mind without arousing the slight feeling of their disjointed character, so the same thing may occur in mania. As a rule, the mental processes are entirely clear to the patient.

In a flight of ideas of a moderate grade, the mood is mainly a cheerful one. The fact that his thoughts come voluntarily, without effort, increases the patient's satisfaction, and makes him look hopefully into the future. But this mood is not uniform, and even cautious opposition will produce a violent manner and evidences of irritation. Such impressions, however, are very brief, and the mirth soon comes again to the front. This varying mood and irritability now removes all doubt in the minds of the family concerning the morbid character of the condition. When the patient will not tolerate the slightest opposition without cursing and shouting, or destroying clothing and

furniture, the patience of the family becomes exhausted, and the physician is summoned. The anger of the patient is not excited by external causes alone. An outbreak of angry excitement often appears in the midst of unbridled mirth, but soon returns to the previous condition. In a similar way we often notice, at this period, a temporary depressed mood, with violent crying and complaining, and for which not the slightest external cause can be found. This also subsides rapidly, and the dominant mood remains cheerful.

The gestures soon excite the interest of the observer, not alone the play of the features, but also the movements which accompany impulses and acts. The play of features is lively, the eye is bright, the skin often reddened. At the height of the disease there is no doubt that the patient cannot control the facial expression. Distortions and even spasmodic twitchings accompany the increase of excitement, and it becomes evident that the facial movements, like the impulses and acts, are not alone free from inhibition, but take place as the direct result of irritative conditions in the cerebral cortex. In mild mania all active gestures result from the excitability, but their impulsive character may still be regulated and checked. The external activity is also confined, in great part, to customary channels. For example, the patient walks about to an unusual degree, but he is apt to conceal his restlessness by the statement that walking is very necessary and healthful. Another makes long trips, foolhardy boating excursions, or exhausts himself in mountain climbing. The motor restlessness is manifested in a less serious manner by useless packing and unpacking of books, or constant fussing among old papers, under the pretext of putting things in order. Women busy themselves with their toilet, or make daily changes in the arrangement of their hair. To this is soon added increased coquetry. They dress themselves fantastically, the manner becomes more self-complacent, and they often have a tendency to display their superiority, especially by singing and acting before large audiences.

In the female sex the sexual impulse soon pushes into the foreground. Acquired modesty may veil its manifestations, so that it first appears under other forms—for example, in the shape of accusations against other women or the tendency, on every occasion, to speak with the physician about menstruation, etc. Such subjects of conversation are apt to be associated with excessive devotion to religious exercises. At a later period the excitement is revealed more clearly by protestations of love, and finally by shameless offers of sexual intercourse. In men sexual excitement is less marked, probably because it can be gratified by them, without difficulty, in houses of prostitution. But the same tendency appears in their conversation, and is shown particularly by *double entendres* and smutty jokes. Masturbation is kept more concealed in both sexes. In slighter grades of excitement we find only an excessive dressiness, the reading of lascivious novels, attempts to touch the bodies of persons of the opposite sex or merely to come in contact with their clothes.

During this stage there is often observed, in men, an excessive addiction to stimulants, but this is probably due to their opportunities, inasmuch as the maniac likes society and his mood is intensified by alcoholic drinks. As a rule, very slight amounts produce intoxication.

Nor may we speak of an impulse for collecting articles in describing an activity which results, independently of the will, from direct psychomotor irritants. There are no delusions as intervening links, but the removal, even theft, of articles is an expression of restlessness which finds satisfaction in the purposeless grasping of such objects.

In the milder grades of mania, delusions and hallucinations are rare. The mistakes which the patients make in the personality of others are due, as a rule, to insufficient observation, so that a partial likeness suffices to produce the deception. In the same way sounds are rapidly worked up into definite ideas. Hence we have to deal with illusions, not with peripheral or central hallucinations.

Although all these phenomena indicate an increased

activity of the nervous system, the income is soon less than the output. The excited patient often forgets hunger and thirst, chooses improper food, and these factors, together with the loss of sleep, soon result in loss of weight which proves the impaired nutrition. Although the feeling of exhaustion is absent even after great bodily efforts, yet the very increase of excitability is an evidence of exhaustion of the nerve power. The pulse is moderately accelerated. The menses are often absent, but this has no particular significance.

Thus far we have considered only the symptoms of the milder grades of independent mania. The disease may remain at the height indicated for several weeks or months and then pass gradually into recovery, or it may lead to the symptoms known as frenzy from the prominence of the unbounded motor excitement. But as other insane, especially melancholics during attacks of fear, also grow frenzied, we prefer to use the term mania, because, considering the different violence of the individual symptoms, the severer conditions of manial excitement have the same symptoms as the milder grades already described. But it must be noted that, after the preliminary melancholic stage, severe mania passes much more rapidly through the milder degree of excitement, and the symptoms proper rapidly attain their complete development. The more prolonged and profound the depressed mood the greater are the duration and violence of the following mania.

The direct manifestations of the irritative condition of the cortex can be recognized much more distinctly in all the symptoms of severe mania. Hence the psychomotor movements occupy the foreground, and numerous hallucinations and delusions appear directly, without any attempt at explanation. Although only the very highest grades of severe mania are accompanied by more lasting anatomical changes in the brain, yet in some cases the accompanying physical symptoms show the marked irritation of the nervous system. Hence these few cases do not justify the creation of a special group, distinguishable

under the term acute delirium from simple functional mania. Nor do I feel justified in accepting a group known as hallucinatory confusion, on account of the very great prominence of hallucinations, because these cases also exhibit the other symptoms of mania.

At the height of its development, then, severe mania exhibits enormous motor restlessness. The motor impulse of the patient is discharged in entirely irregular movements. There is no longer any question of actions with a definite purpose. Perfect regardlessness in movements and actions; ceaseless, uniform activity by night and day, are the signs of this motor excitement, the patient attacking every obstacle with violence, and regardless of consequences. Convalescents or others who still possess a certain amount of reason occasionally state during the attack that they cannot do otherwise, that they must dance and jump and tear things. The frenzy is increased by the necessity of restraining the patient's liberty, and doors and windows are frequent objects of attack. But if the restraint is moderate and destructible objects are not within reach, the motor excitement is often expended in a less harmful manner. Laughing and crying, singing and whistling, clapping his hands, the patient jumps and dances around the room, cleans up along the floor, the walls and windows; if supervision is insufficient, he washes himself with his own urine; then he drums upon the door, beats the table, overturns a bench, and makes rapid turns around the room, laughing and shouting. He overturns other persons, and takes from them some utensil, merely to throw it away in a moment. Or he dresses and undresses with rapidity, cuts his clothing or bedding into narrow strips which are placed fantastically upon his person. A turban of rags or twisted bundles of straw adorns his head, the articles of clothing are placed on the wrong parts of the body, the shoes and stockings are thrown away, again collected, and ball is merrily played with them. Leaves are placed in every buttonhole. All attainable objects are picked to pieces and then re-

constructed into new ones. The patient collects all sorts of useless objects—stones, pieces of wood and glass, nails, shreds of paper, spoons, forks—fills his pockets with them, and uses them for all sorts of foolish notions. The walls, furniture, and windows are scratched or besmeared, and drawings are made upon the floor or table. Plastic works of art of a very doubtful value are made from chewed pieces of bread or other soft material. The patient is constantly entering into new plans, admiring in the highest degree his own skill. At the same time he is usually outside the hurlyburly, as it were, and perhaps remarks ironically, when his follies are opposed, that he is allowed to do anything because he is crazy.

This condition may last, without any feeling of exhaustion, for weeks, hardly interrupted for hours by restless sleep or by a feebler frenzy for a few minutes when exhaustion begins to be manifest. The flight of ideas is often partly obliterated, but is still manifest by certain phrases and words. The incoherence now increases to the highest grades, because the already overfilled consciousness very often receives constantly new impressions from numerous hallucinations. These are very changeable, chiefly of a pleasant character, but very often interspersed with frightful ones. They are accompanied by a very rapid change of mood. True central hallucinations, especially visual, develop. Series of shapes in gaudy attire pass by; they talk and sing in front of the window. The vividness of these phenomena induces the patient to take part in the play; for some moments he speaks theatrically in long periods, then listens, speaks again, then suddenly laughs and jumps about, because the scene no longer interests him. The vividness may be so great that an individual who enters the room does not interrupt the dialogue, but a rôle is assigned to him. Incoherence is, however, generally manifested so that the spectator is unable to follow the association of ideas. Hence the delusions, which are chiefly nourished by the hallucinations, are rather remarks *en passant* than firm opinions. The de-

lusions are fleeting, and develop in great measure on the basis of the increased self-esteem. Some patients declare themselves princes or kings, but an internal systematization of such fancies hardly ever takes place. Frightful hallucinations and delusions also develop at times and force angry affects into the foreground. Hallucinations of taste, smell, and feeling are more often in a disagreeable than in an agreeable association. They also return somewhat more constantly in the course of mania and then lead to an increase of the refusal to take food, which is already pronounced in the excited patient; the fear of poisoning now makes its appearance. In women (and undoubtedly in connection with the approach of menstruation) hallucinations of the lower senses increase and cause disagreeable sensations which lead to great excitement and indeed to violent attacks. Other female patients revel in maternal feelings, rock a pillow upon the arm, lay it lovingly upon the breast, but soon remove it to begin another occupation.

In severe mania the fleeting and confused character is common to all hallucinations, illusions, and delusions, whether of an agreeable or disagreeable nature. This becomes more marked the more violent the disease, and in the highest grades they lose their distinctness to the observer. The patient now rolls and twists upon the floor, stamps his feet, claps his hands, beats time upon the floor, blows violently. Indistinguishable syllables and sounds, detached parts of sentences and outcries, are strung together in a disconnected series; inarticulate cries and moans are uttered with foaming mouth, and this is only stopped by complete hoarseness. Irregular twitchings of the face and limbs, gnashing of the teeth, stammering speech, and detached irregular clonic convulsions show the implication of the psychomotor centres, and such cases are usually attended with high temperature and acceleration of the pulse.

General sensibility seems to be diminished and but little attention is paid to pain. The patient does not notice the

numerous slight injuries which result from his own violence; even more serious wounds remain unnoticed, or the patient tears off the bandages, and uses them in sport. Another runs around naked in a cold room, or is exposed for hours to the direct heat of the sun. This insensibility is probably due to lack of attention. The patient must be guarded, however, against all such injurious irritants, because they undoubtedly enter into the course of his ideas and aggravate the disease. In temporary remissions of mania we learn that he is able to distinguish heat and cold and is susceptible to all changes in the condition of his body; occasionally he complains of headache and for brief moments even has a distinct feeling that he is ill.

A peculiar phenomenon is the absence of the feeling of satiety, although it is not very frequent at the height of the disease. This is probably an expression of the very extensive nutritive changes in the body, and the often insufficient supply of food. Much more frequently no attention is paid to the food offered, and occasionally there is even a decided refusal of food, following hallucinations of smell and taste. This is soon followed by catarrh of the digestive tract, constituting a very grave symptom which precedes an unfavorable course and death by exhaustion.

If fever appears—often in consequence of the numerous wounds—the entire breakdown of the vital forces is usually very rapid. This condition is accompanied by a rapid, irregular, or dicrotic pulse.

In general, however, the pulse is quite regular in severe mania, and, like the temperature, is changed only by accidental complications. But in the severest cases, which are attended by meningitic irritative symptoms, paralytic symptoms occur at times, due probably to cerebral œdema.

As a general thing, there are fluctuations in the severity of the symptoms. These fluctuations appear to be so much less pronounced, the more violent and rapid the entire course of the disease.

A fully developed case of mania, in which the symptoms are moderate in severity, usually remains at its

height for several months, and at least six months elapse before the disease has run its course. Cases have been reported in which the attack ceased in a few days or even hours; but it must be remembered that an hysterical or epileptic basis could often be demonstrated, or that they were due to intoxications or febrile delirium. At all events we must be very cautious in accepting an independent so-called transitory mania. A duration longer than six months does not exclude recovery, which may occur at the end of a year, but involves great danger of passing into incurable conditions of feeble-mindedness.

If the symptoms of mania still remain distinct the term chronic mania is suitable in a measure, but its appropriateness is lost more and more until finally we may only speak of mental weakness in which violent excitement occasionally develops, as the result of accidental external causes. Finally, these are merged into quiet feeble-mindedness with a certain degree of irritability, into complete dementia, or a loquacious, confused condition is still recognizable as the remains of true mania. But the milder as well as the severer forms offer the best chances of recovery among all psychoses. In the severe forms, however, a considerable proportion terminates in death from exhaustion.

The termination in recovery passes through certain intervening stages. In mania which has developed independently, recovery is never sudden, but more quiet hours and days alternate with periods of greater excitement. Sleep improves and the impulse to movement subsides, while the irregular association of ideas is still evident from incoherent utterances or appears at least in the shape of great loquacity. In milder cases a certain recognition of the morbid nature of the disease is found in the attempt to excuse this or that irrational act, or tearful irritability alternates with cheerful excitement. After severe mania recovery occasionally begins with periods of exhaustion, which may simulate rigid melancholia. If this condition is prolonged, for example, for several months, prognostic

importance attaches to the bodily weight. If this increases only a little, it is probable that the disease will yet terminate favorably, while a rapid increase rouses a fear of termination in incurable dementia. In general, the weight of the body should be carefully watched. In permanent and complete recovery there is almost always a uniform advance of the mental and bodily functions, the bodily weight follows the changes in the mental condition, and hence, if the weight remains stationary for a long time, it is to be feared that the morbid process has not yet run its course. As a matter of course, accidental affections of internal organs must be taken into consideration. If there is coincident tuberculosis we will not expect that the bodily nutrition will improve very greatly with mental recovery.

It may here be noted that such febrile conditions, or even febrile diseases like typhoid fever, may exercise a favorable influence on the course of mania.

The subsidence of the condition of excitement occasionally alternates with prolonged melancholic depression, and this reminds us of the beginning of the disease. Cares for the future and reproaches concerning the acts done during the excited stage annoy the patient, and even melancholic delusions may appear. The mental activity is so slight that such ideas form a justifiable basis for their fears, but they are gradually lost with the increasing feeling of strength. Now the bodily exhaustion is also felt distinctly; former neuralgias, etc., sometimes return in their accustomed manner.

Another transitional condition is a foolish, childish loquacity with silly conduct which then passes slowly into recovery. But all the transitions through dulness or feeble-mindednees, which indicate the great exhaustion of the nervous system, may be absent and, apart from the frequent alternations, there may be a simple diminution and gradual subsidence of the symptoms. This is favored most by a few good nights' sleep.

The permanent recognition of the morbid character of

the disease is not always attended with a distinct remembrance of the events of the disease; the greater the excitement the greater is the loss of memory. A real hiatus of memory is rare, but it is only in the mildest cases that the memory of all details is accurate.

Mania appears to be a less frequent disease than melancholia. It is most common at the age of twenty to twenty-five years. Younger individuals are also attacked, but its frequency diminishes rapidly with advancing age, so that old people rarely suffer. The only exception is the puerperal condition. Many of these so-called puerperal manias are attended by numerous hallucinations; they are due to anæmia (from loss of blood), and their course is relatively favorable. In general, however, sex exerts little influence on the frequency of mania.

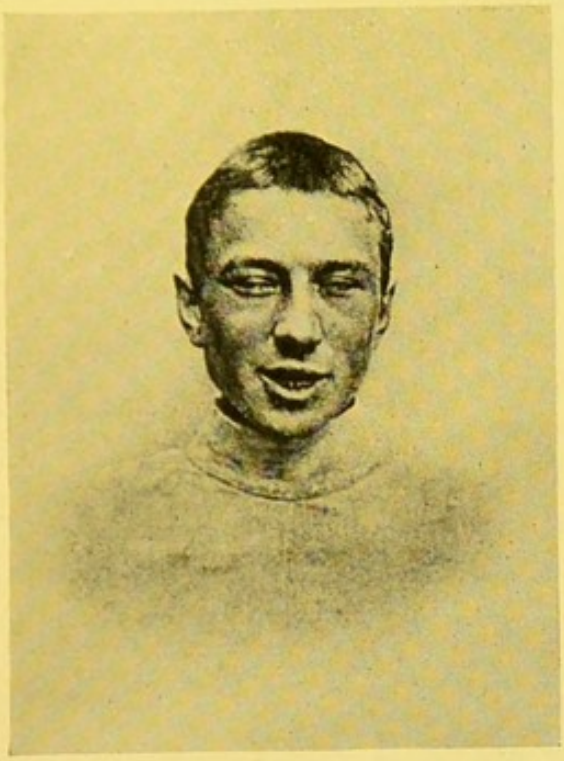
Special mention should be made of the peculiar course of mania in a constitutionally damaged brain, whose functions were always below par or had become so in the course of time. The disease is often not very severe, is very prolonged, and a disputatious condition and attempts at explanation of the excitement are very prominent. In the milder grades the mixture of healthy and morbid elements is so pronounced that the laity and many physcians deny the possibility of a morbid basis. But a rapid though temporary increase to useless maniacal acts will teach them differently, or careful observation reveals sudden brief periods of depression among the manifestations of cheerful excitement. When such conditions are associated with slight, often unrecognized feeble-mindedness, they occasionally bring to mind the so-called moral insanity. The tendency to interpret irrational acts in an apparently rational manner must be regarded as an unfavorable sign in an otherwise mild mania, because the psychoses which develop in a feeble brain have a greater tendency to be prolonged and to return. Nevertheless they do not, as a general thing, pass into complete mental weakness, even after prolonged duration, although the higher intellectual faculties distinctly diminish.

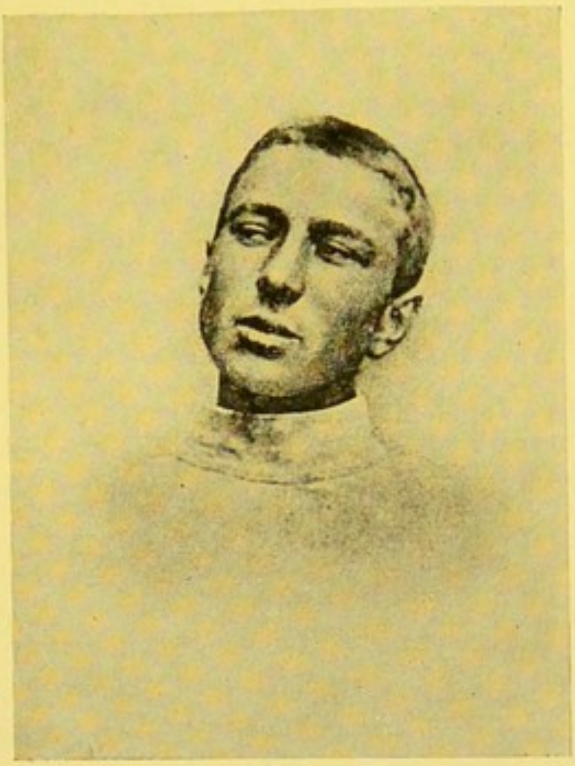
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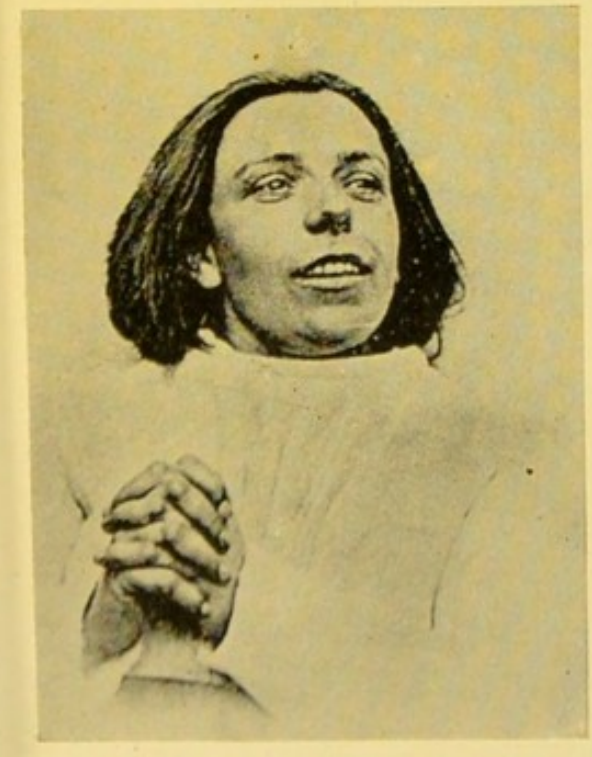
MANIA.

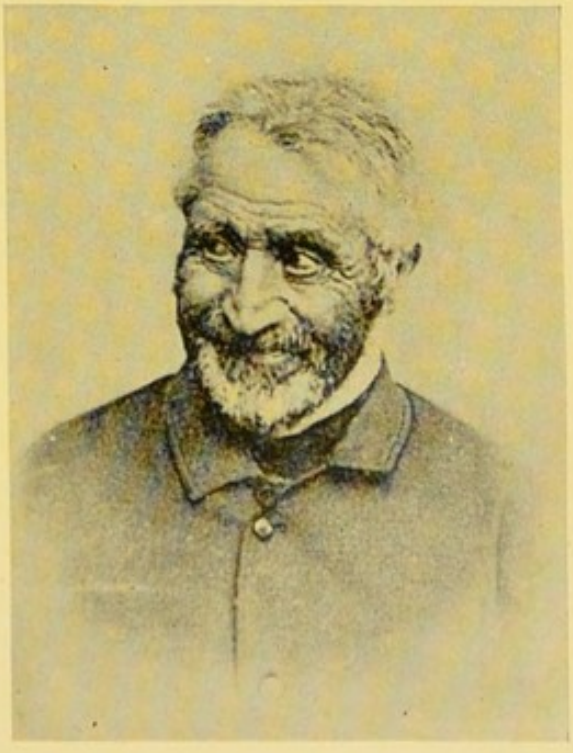
THE characteristic feature of the expression is the mobility and variety, although cheerfulness predominates. Hence it is difficult to retain details and our pictures show but few forms of expression. The painful melancholic affect makes firm traces in the integument of the face, while this is moved very fleetingly in maniacal excitement, and it can only be comprehended when the play of physiognomy is attributed to its causes in the brain itself. The disturbances in the circulation and nutrition of the brain, especially of its cortex, lead, through the excess of nervous activity, to unrestrained forms of expression in which there is much that is superfluous. The two pictures of the young man therefore give only a flint idea of his constant grimaces, which were continually interrupted by laughing and chattering, by movements of the head and body. The cheerful expression of the young girl permits a better resolution into the movements of individual muscles. The palpebral fissure becomes smaller from contraction of the orbicularis palpebrarum, and at the same time the contraction of the levators draws the upper lip upward; the zygomatics open the mouth and draw its angles upward and backward, so that the teeth are exposed. The more movable skin of the old man permits the same effects to be seen more distinctly in various folds; hence we find wrinkles of the lower lids and outer angles of the eyes and transverse folds at the root of the nose, because the cheeks and upper lip are raised. The transverse wrinkles on the forehead are accidental; in cheerful affects, as a rule, the forehead becomes smooth. The brightness of the eye, which results from congestion and pressure of the adjacent muscles, is very often an essential feature of cheerful excitement. As is well known, the expression of greatest joy approaches that of weeping and pain; the girl's folded hands also show this relationship.

On account of the restlessness of the bodily movements I have been unable to photograph anger and the more violent passions. It must not be forgotten that the facial expression is materially changed by the position and movement of the entire body.









Even the milder grades of mania should not be treated in the family, because the necessary removal of external irritants is there impossible, and the patient cannot be kept constantly in bed. This is often attainable in a hospital. When the motor excitement is pronounced, an asylum is the only proper place for treatment. The possibility of isolation is especially important, because when employed in moderation, especially in combination with frequent attempts to bring the patient again among others and thus to give him opportunity for occupation, isolation is the most important aid against maniacal excitement. We can generally dispense with mechanical restraint, or at least get along with the milder measures, such as the application of leather gloves. Permanent restraint is only justifiable in cases of severe surgical injuries and threatening exhaustion of the vital powers. A well-fitted asylum is provided with gardens in which excited patients may walk undisturbed for a few hours every day. It is still better when the excitement can be calmed by suitable occupation. In milder grades the maniac often expends his excitement in garden and field work, and such occupations, together with walks in the open air, cannot be recommended too highly.

Prolonged baths are useful for sedation, and frequent baths are also necessary for the care of the skin. The room should be well warmed, the clothing should be warm, snugly fitting, and occasionally closed on the back by special mechanical contrivances. Food must be frequently offered if the patient forgets to eat and drink on account of the excitement.

Among the hypnotics, choral hydrate with the addition of morphine is very effective; sulfonal may sometimes be given unnoticed. The greater the excitement the more important do hypodermic injections of morphine become. They are especially useful in disquieting hallucinations, particularly when repeated methodically. In the milder grades of mania, when there is a sexual color to the symptoms, and in the protracted forms, sedation often follows

the use of potassium bromide in large doses. Abstraction of blood is only permissible in symptoms of meningitic or protracted cortical irritation. Even then, the results are only temporary. Anæmia indicates the administration of suitable remedies, but the chief importance attaches to good nutrition. Strong cathartics should be avoided and a movement from the bowels every second or third day will suffice.

The methodical use of hypnotics often will secure permanent rest in bed, but we must avoid excessive doses in recent cases, because termination in dementia is not infrequent.

The psychical treatment of mania cannot be laid down in general rules, and requires an inborn talent more than in other psychoses. Inappropriate commands and, to still a greater extent, anger concerning foolish acts on the part of the patient are injurious. A jest at the proper time will sometimes prevent an outbreak of anger. As a matter of course, such ruses are useless in violent mania.

As a general thing it it is advisable to delay removal from the asylum until recovery is complete. At all events travel and other distractions are injurious during convalescence. If such convalescents come under the care of the general practitioner, he must continue to keep away all external irritants and, when necessary, secure complete quiet by the use of morphine. Under such circumstances it is an excellent remedy when given internally.

C. PERIODICAL FORMS.

Almost all psychoses exhibit periodical changes in their course, especially during their development. These changes are usually irregular and due to accidental external causes. In discussing melancholia and mania, it was found that the changes of reaction in the mood were much more distinct when the mental constitution had been impaired, prior to the attack, by hereditary taint or acquired disability. The influence of heredity is visible in a large

number of mental disorders. Certain groups are distinguished as periodical forms of insanity, because periodicity is their most important clinical sign. In addition, we find that the development and decline of the disease are comparatively rapid. The morbid condition itself is very variable and mingled with healthy elements. In the intervals between the attacks the patients are not normal, and a new attack may develop from the internal predisposition, without external influences. As a matter of course, all exciting causes may interfere with the regular periodical course. When distinct attacks recur at long irregular intervals, the difference between this invalid basis and completely restored mental health after a psychosis affecting a healthy brain is shown in various ways. Such persons are easily exhausted, sensitive, and irritable. On the other hand, there is a certain apathy to higher interests or such interest is associated with stress upon the personal relations. Great facility in the association of ideas may permit bold series of thoughts, but they cannot be worked out with patience. If no independence of resolution is required, such an individual may long conceal his morbid impulses under the influence of an habitual activity which is regulated by others. In conversation, however, we can detect peculiar turns of thought, and the entire behavior is out of the common run.

In view of the fact that these individuals are not mentally healthy, we must regard complete psychoses, which develop in them, as persisting during life, so that the periodical changes in the symptoms develop during the course of the disease. A main difference consists in the fact that, in the one case, the changes occur close together within the brief duration of the psychosis proper, while, in the other case, they accompany the entire life. Certain of these groups are characterized by an approximate regularity as regards the duration and form of the symptoms. Irregular periodical changes are excluded from the present discussion; the diseases which will now be described belong almost exclusively within the boundaries

of melancholia and of mania. They are composed of the regular recurrence of melancholic or maniacal conditions, or of the regular alternation of melancholia and mania. The apparent caprice in their occurrence has only a clinical, not an anatomical basis. The hereditary taint is common to the other irregularly varying psychoses, and the invalidism of the entire mental constitution is found in certain other periodical affections associated with invalidism of the entire nervous constitution, such as neurasthenic, epileptic, and hysterical conditions. The latter occupy a special position on account of the distinct appearance of many nervous symptoms which have an organic basis. It is important to know that the first attack of periodical insanity is often due to an external exciting cause. Then in the following attacks the definitive clinical history is gradally evolved out of the general mass of symptoms.

Periodical Melancholia.

It occurs more frequently in private practice than in asylums, because it is usually mild, and consists mainly of the distressing consciousness of inhibited thought and volition, or of inhibited feelings. This restriction is confined mainly to the course of ideas, and there is an absence of hallucinations; the anxious reaction of feeling and the depressed mood are not attempts at explanation, but are the original symptoms of a true melancholia. Consciousness is little impaired, but its contents are often narrowed by imperative conceptions.

Typical periodical melancholia begins rapidly after a brief initial depression. The pronounced melancholia then lasts either for a comparatively short time (a few weeks) or for one or more years, the latter being the common form. Consciousness is then clear, and the memory of events is subsequently complete. Hallucinations are rare and usually present only at the start. During the entire period, however, certain delusions often persist unchanged and are accompanied by anxious feelings of vary-

ing intensity. The character of the ideas, the tendency to suicide, and the other symptoms are the same as in ordinary melancholia. Then, without any apparent previous change, the terror and delusions are very often lost suddenly. The patient, who yesterday was very ill, meets us to-day with cheerful mien, and declares himself perfectly healthy. In fact, physical recovery now takes place very rapidly, and the change in the bodily weight is especially striking.

The first attack of a subsequent periodical series might be suspected from the rapid onset and subsidence, if we knew the patient's previous mental constitution. This would be substantiated if the feeling of illness often was accompanied by attempts at explanation, as, for example, that the patient had committed a crime, and, in his opinion, was only disquieted by justifiable remorse.

When the attack is over, no mental weakness is noticeable as regards the patient's occupation, but there is usually a slight ethical defect, perhaps shown only in the prominence of egoistic feelings and the lack of sympathy for others. In many cases, however, they are less independent and more irritable when unusual demands are made upon them than before the first attack. This generally occurs in the twenties, rarely at a later period. Ten years or more, as a rule, elapse before the second attack. Then a second attack occurs suddenly, similar in all details to the previous one. Thus, one patient was dominated, in three attacks, by the delusion that she had choked her mother to death years before; even the same movements, refusal to take food, moaning, and crying were repeated in exactly the same manner.

The rare brief periodical attacks exhibit a few deviations. The symptoms of inhibition predominate, and almost stuporous signs are found. Violent fear with occasional outbreaks, auditory hallucinations, usually of a religious character, sometimes vivid visual and olfactory hallucinations torment the patient, who is apparently rigid. Afterward he proves that he was cognizant of things going

on about him. At the end of a few weeks the condition ceases almost suddenly; the patient states that he feels as if a veil or pressure were removed, and that he feels well. There is often refusal to take food, so that the weight of the body may diminish very markedly in a few weeks. Then follows the free period, usually lasting several months, rarely more than a year, as in one patient under my observation. At first his attacks were very much alike, but then the intervals became shorter and to the former symptoms of pure melancholia were added delusions that had not been noticed before, associated with auditory hallucinations and fear of poisoning. Finally he committed suicide. During the free intervals he recognized the morbid nature of his illness.

The rare cases of periodical melancholia are increased somewhat in number by a few cases in which the predominant affect is accompanied by impulsive centrally produced movements; in addition there are numerous hallucinations. If the remembrance of the attack is very indistinct, we must always think of the possibility of an epileptic dream condition.

As a rule, the treatment of a periodical attack requires admission to an asylum, where the measures to be adopted are the same as in every melancholia.

Periodical Mania.

Periodical mania is much more frequent than periodical melancholia, particularly in females. It is sometimes synchronous with menstruation, but more frequently this exerts little influence. Some observers believe that the attacks, even in males, attend periodical increase of sexual desire. Melancholic prodromata are not constant. They are often very slight, but in severe and prolonged periodical mania, prodromal severe melancholic symptoms are constant. The milder cases are more frequent. In them the maniacal excitement begins suddenly, remains at its height for several weeks, and then subsides with equal abruptness.

At the height of the disease the mixture of healthy and morbid elements is especially distinct, and the patients are constantly attempting to justify their irrational speech and acts in long harangues. If the necessary dialectic skill is wanting, it is replaced by brief remarks, such as "that it is natural to get violent and excited, if one is constantly irritated," etc. Hence, these milder cases often create the impression of moral depravity because the impulse to movement and the inner restlessness constantly give rise to deeds which are contrary to morals. The perfectly proper behavior after the attack shows the morbid basis of the former condition so much more distinctly. In the quiet intervals the patients are usually silent concerning the excited stage, and answer evasively, or attribute it to supposed irritation in the surroundings. The intervals rarely last more than a few weeks or months. These mild attacks often recur during the patient's entire life, without any external provocation. The patients always exhibit distinct evidences of mental invalidism; in the intervals they are irritable and often apathetic to outside interests. With advancing years the boundaries of the attacks may be somewhat obliterated and the excitement grows less; there is distinct diminution of mental ability, but dementia does not develop.

In another series of cases the flight of ideas is more pronounced during the attack; insomnia, motor restlessness, and hallucinations occur in the same way as in a single attack of violent mania. The combination with angry passions is very common. But even in the highest grades of excitement the patient very often remains rational, in a way, and the profound disturbances of consciousness with subsequent amnesia, which occur in the severest grades of mania, are very rare. The mixture of healthy and morbid elements is likewise characteristic of this form of disease. As a rule, the severe forms of periodical mania also develop and subside more rapidly than single attacks, but diagnostic doubt can only be removed after the repetition of the attack. The similarity between

the different attacks has even been spoken of as photographic. In some cases there is an exact repetition of various physical signs (vasomotor paralyses, unilateral headache, increased secretion of urine or perspiration, etc.) and even the tone of the voice, the facial expression, the dancing and jumping are repeated in exactly the same manner.

The same delusions and hallucinations with very similar contents also make their appearance. In an asylum, in which the outbreak of the new attack is not obliterated by external influences, slight changes in clothing or the constantly repeated desire for their discharge, usually indicate the beginning of an attack with such certainty that the attendant is accustomed to report that "so and so is about to have another attack because he again does this or that."

The duration of each attack is approximately the same in the same individual, but this is not true of the interparoxysmal periods. In the severe cases a certain degree of mental weakness develops, in the intervals, with advancing years.

The prognosis as regards complete recovery is unfavorable, but the individual attack will very probably run a favorable course without passing into a chronic form. In the most favorable cases the attacks remain absent for years. The termination in dementia is very rare.

The treatment must be confined to the individual attacks. It sometimes appears as if attempts to abort an attack result in severer outbreaks at a later period. Morphine and potassium bromide are chiefly recommended, and are undoubtedly useful in moderate cases. If potassium bromide is given in large doses for a few days before the threatening outbreak (beginning with 6.0 gm. daily and increasing by 2.0 gm. daily until 12–14.0 are reached) the prodromata alone may be developed, and at all events the excited stage, if it does appear, is much milder, although it is very often decidedly prolonged. In some cases there was no doubt that the duration of the free in-

tervals was diminished so that the value of the drug was problematical. One patient presented tottering gait and thick speech after large doses of the bromide, but during the free interval she begged that the drug be given to her during an attack, because she felt that the excitement was lessened thereby, and it was then unnecessary to isolate her.

Even during the periods of excitement the bromide may be continued, although in smaller doses. In one case which formerly ran its course, without bromide, as an angry mania without hallucinations, the attacks after the administration of the drug became much shorter and were attended with numerous terrifying hallucinations of sight, hearing, and smell, which resembled so-called hallucinatory confusion. This peculiar chemical reaction of the brain had no effect upon the subsequent free interval. Then for a time bromide was discontinued, and severe outbreaks were aborted by sulfonal. After the bromide was again administered, there followed a brief attack, similar to the one described above. Other observers have reported more favorable results from the use of the bromides. Periodical manias rarely are treated at home. In asylums their violence is greatly ameliorated by isolation, and sometimes this is effected in a simple manner by protracted rest in bed. Periodical manias are probably the most suitable field for the application of methodical chemical restraint, but even here narcotics are not curative remedies. Cannabis indica is particularly praised in this condition. In other respects the treatment is the same as that of ordinary mania.

Circular Insanity.

Those cases of periodical mania in which there is a prolonged and distinct melancholic prodromal stage, approximate circular insanity. The latter consists essentially of an alternation of the maniacal and melancholic conditions, which either follow one another immediately or are separated by an interval. If a sharper distinction is to be

made from the above-mentioned form of periodical mania, then circular insanity must be regarded as dependent upon the existence of a perfectly free interval and not merely of the apparent quiet of a transition. In the sequence of mania and melancholia the occurrence of a free interval would be of less diagnostic importance because this sequence occurs only in circular insanity. Conditions of exhaustion with a tinge of melancholy are comparatively rare after mania. As a matter of fact, every possible form of combination between melancholia, mania, and free intervals is observed. Cases in which a free interval does not develop between the two antagonistic conditions are called alternating insanity; but the generic term, circular insanity, also applies to them.

Special attention must be paid to the distinction between a true and an apparent interval. We will suppose a patient in the period of maniacal excitement; after the excitement has reached its height it begins to diminish. He becomes less violent in his speech and acts, but his former personality has not returned. He sees everything in a bright light, makes all sorts of plans, interferes in matters which do not concern him. It is evident to every unbiassed observer that he is not yet well. Then the excitement diminishes still further. A condition of rest and external equilibrium follows, but is very brief. The first signs of returning trouble appear, the patient seeks solitude, and soon the melancholic condition is distinct.

Now let us consider a true interval. A patient is in the period of melancholic depression but has begun to resume his accustomed occupations. He begins to regard himself as well, and judges correctly his previous morbid and his present condition. His complete personality is restored. The longer this condition lasts (and it may last several months or more) the more distinctly is it a true interval. This interpretation is not changed, even if the former personality exhibited the signs of mental invalidism, because this is generally the case in circular insanity.

We will now give the clinical history of true circular insanity, with or without intervals, devoting our attention first to the milder forms because they are more frequent and come under the notice of the general practitioner. We often meet with individuals who are not regarded as insane, but who pass their entire lives in a periodical alternation of moderate excitement and depression. In the excited period they appear to exhibit merely a slight change of character and at times an unusual activity. They pay numerous visits, write unnecessary letters to mere acquaintances, sleep little, make trips, are excessively cheerful on every occasion. Although their acts are done in a disorderly way and their conversation exhibits something of an incoherent character, their real condition is not noticed by persons who have not known them at an earlier period, although its morbid character will not escape the careful observer and is sometimes even diagnosed correctly by members of the family.

This morbid condition becomes more distinct when, after the excitement has lasted a longer or shorter time, it passes gradually or suddenly into the opposite condition, so that we seem to be dealing with two different individuals. The patient ceases to make visits, becomes reticent, seeks solitude, complains of general malaise, præcordial fear, and loss of appetite; he is sad and anxious without reason. He has a distinct feeling of his condition and is depressed on that account. This may lead to refusal to take food, and, in extreme grades, he locks himself in his room for several months, without attracting notable attention on the part of those around him. Other individuals see him only from time to time and have no opportunity of observing him while he is locked in his room. Hence they have no suspicion with regard to his peculiar condition for a number of months, and when he again makes his appearance—when the period of excitement again begins—he appears to be the same person as before. He may be regarded as an eccentric character, of feverish activity, but his morbid condition can only be determined

by accurate observation of the alternation between excitement and depression.

This mild grade of circular insanity runs its course almost unnoticed, and yet it alone serves to explain the peculiarities of certain individuals. In many of these cases the first indications are observed in childhood. For long periods such children exhibit unfounded depression and excessive riotousness, which is attributed generally to moral defects or improper education. Years elapse before the distinct development of the disease. Circular insanity may be regarded as an intensification of the change of mood which occurs with a sort of regularity and without external cause in individuals with an hereditary taint. This interpretation is not shaken by the fact that outbreaks of the disease occur chiefly in the developmental years and at the extinction of sexual activity. For this reason the larger proportion of patients belongs to the female sex.

Although there are many transitions between this half concealed form and the distinct circular forms, we will now consider only one in which all the symptoms are fully developed. It may begin suddenly or very slowly, but the circle usually begins in the same way in the same patient. The circular course is rarely distinct from the start, and its development is often preceded for years by frequent attacks of single or periodical melancholia or mania. The variability of the psychoses which are based on an hereditary taint appears to require a certain length of time before definitive conditions develop.

Let us assume a case in which a severe melancholic condition has developed rapidly after an apparent or real interval. In order to give all the different possibilities, we would have to describe again the symptoms of melancholia in general. It will be sufficient to emphasize a few symptoms. A striking phenomenon is the distinct mimic expression, and we are justified in attributing this to the fact that, as a rule, the most profound disturbance of consciousness does not occur in the melancholic stage of cir-

cular insanity. The feeling of illness is generally very pronounced, and makes the patient extremely unhappy; when he is still communicative, he often expresses great fear of the oncoming attack of excitement which he foresees. Definite delusions are rarely observed. In more marked stupor the face assumes a mask-like expression, and changes of expression are accomplished by slow contractions of the muscles. Furrows and wrinkles are literally graven into the skin. More rarely the expression of spiritual pain is associated with that of purely physical headache; then we probably find rush of blood to the head, ringing in the ears, a feeling of pressure in the head. Sleep is poor, despite the apparent rest while in bed; bad dreams torment the patient. The weight of the body falls considerably, but after a time the body becomes accustomed, in a measure, to the morbid condition, and there is a slow increase in weight.

Let us now assume the special case of a female patient who lies in bed in rigid stupor. The condition lasts several weeks; the menstruation, which was due at this time, may remain absent or it may have no effect upon the condition; more rarely it produces a change. On careful observation slight bodily changes are found to appear. Sometimes the patient takes a deep breath, lies upon the other side of the body, the lips move occasionally, and a strange expression flashes across the face. At the end of a few hours she raises herself in bed and sighs; the pulse is not accelerated, occasionally somewhat fuller than before. As the patient soon lies down again, a careless observer may believe that the condition is the same as before. But the experienced observer recognizes the slight forerunners of the storm. It breaks forth suddenly in a night, in a few hours, even a few minutes. Now the pillows and bedding begin to fly, loud scolding opens the scene, and a true maniacal frenzy begins. It is unnecessary to describe this further, but one important sign must be mentioned. In the majority of cases consciousness is comparatively well maintained.

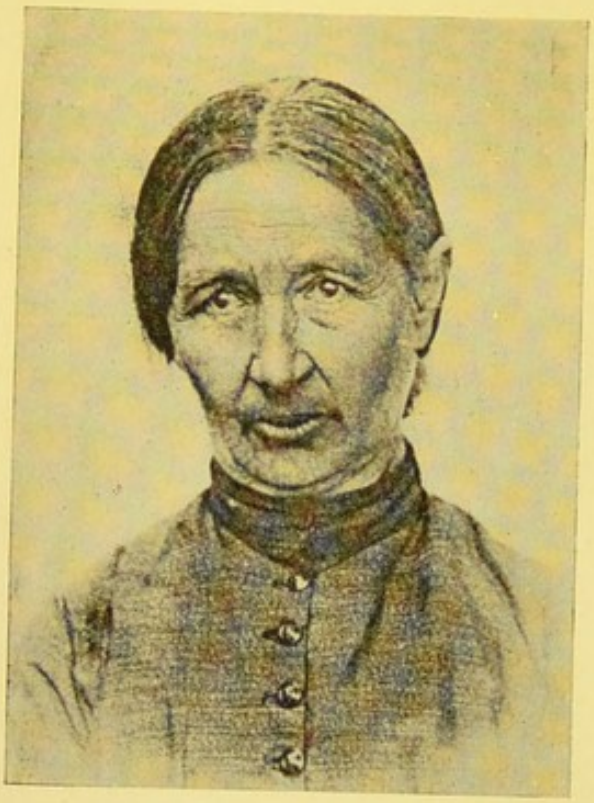
The peculiar lack of correspondence between a patient's consciousness and his really maniacal actions often makes him a veritable torment to those around him, especially when the maniacal excitement has somewhat lessened. The patient is able to carry out his desires with great shrewdness, and to make thorough use of every opportunity in this direction. Hence, he is very fertile in devising measures to deceive his attendants, to steal the property of others (often entirely useless articles), and to carry out all possible useless follies. In the asylum he soon rules his fellow-patients, fleeces them whenever possible. This is made easier by his conversational talent. Such patients become so much more troublesome because, on account of their constant affirmation of their clear mind and fine culture, they are often transferred to better wards, where they are a source of great annoyance to more rational patients. They are filthy in the extreme and carry the dirtiest articles in their pockets; they flare up at every remonstrance, and attempt, by means of loquacity, to conceal their faults from others.

A very characteristic feature during the excitement is the mimic facial expression and the general bearing, which acquire a stereotyped appearance in the course of time. As a matter of course, the expression is not constant but changes frequently. But the repetition of the same range of feelings is exhibited in every fresh attack by the same gestures, speech, and expression. Occasionally there is a temporary tearful affect, more rarely a true melancholic depression of brief duration.

The attack almost always subsides slowly. Opinions differ as to whether the circle begins with melancholia or mania. The majority are agreed that melancholia opens the scene, so that we are perhaps justified in assuming that the melancholic stage has been overlooked in the other mild cases.

It has often been maintained that circular insanity is always unattended with hallucinations, but this is not always true. Perhaps they appear only in the severest

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DESCRIPTION OF PLATE III.

PERIODICAL FORMS.

THE rare form of periodical melancholia generally presents no changes in expression from that found in simple melancholia. The two upper pictures represent an impure form of periodical melancholia, because it is irregularly interrupted by conditions of violent excitement; on the whole, however, the periodical change is confined to the melancholic depression. The first picture illustrates, in part, the remarks made concerning the plate on melancholia.

The second picture exhibits a peculiar expression which has nothing to do with melancholia. It was due only in part to the depressed mood of the patient, but chiefly to the bright sunlight. The wrinkling of the forehead and eyebrows, the folds on the skin of the nose, the drawing upward of the lower lids, cheeks, and upper lip serve to diminish the palpebral opening and prevent the entrance of light. The same play of features was repeated, however, in a darker place, and the patient's conversation showed that she experienced feelings of disgust and repulsion, associated with the melancholic mood.

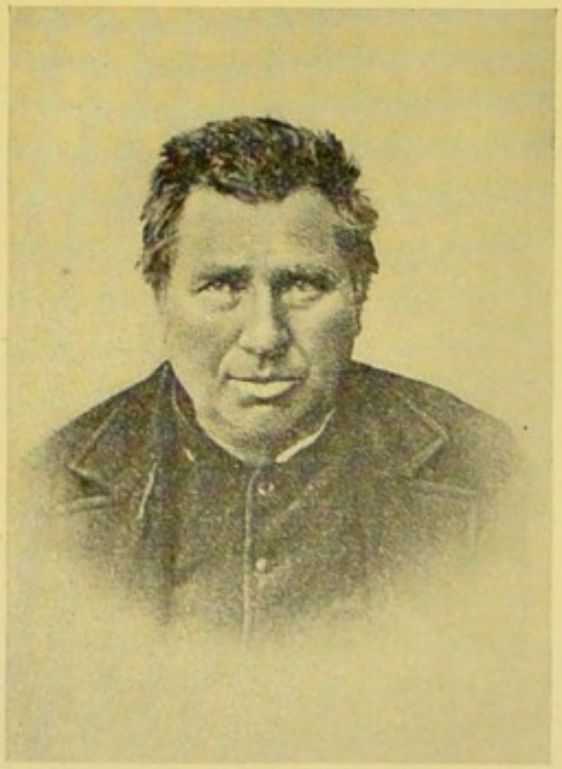
Periodical mania may run through the entire gamut of cheerful expressions, passing into rage and the most immoderate affects, which, in part, cannot be photographed. There is even difficulty in milder forms of excitement on account of the bodily movements. For example, in the first of the two lower pictures the woman seats herself in order to be photographed; hence the bold draping of the shawl and the comfortable position of the hands. The firmly closed mouth, together with the lightly wrinkled eyebrows, which are drawn downward, give an expression of decision with a slight admixture of mocking spite resulting from the slight elevation of the mouth on one side, where the naso-labial fold is more distinct.

The second picture gives a cheerful and cunning expression, owing to the smooth forehead, the elevation of one eyebrow, and the raised angles of the mouth with pronounced naso-labial folds.









DESCRIPTION OF PLATE IV.

PERIODICAL FORMS.

In circular insanity we furnish pictures merely of the antagonistic maniacal and melancholic conditions, as the expression in the latter is very similar to that in the free intervals.

The pictures show this antagonism very distinctly. As the wrinkles of the melancholic period, which persist for a long time, are permanently fixed, the expression of excitement is somewhat obliterated. Upon the forehead of the melancholic woman are two semicircular furrows above the outer parts of the eyebrows. During the melancholic stage this patient suffered from violent headache, and the frontal muscle exhibited frequent brief contractions in its outer parts above these furrows. The spasmodic muscular contraction was confined to the outer parts because the median portion is held more firmly in position, and hence the peculiar semicircular furrows were produced.

As a matter of course there was a very active play of features during the period of excitement, and the pictures can therefore only be regarded as accidental forms of expression. Both patients spoke constantly and made grimaces.

cases, especially when the change coincides with the period of menstruation.

The duration of the different periods varies greatly in different individuals, but they are more uniform in the same patient. In very rare cases a period runs its course in a few days, usually several weeks elapse, occasionally even months and years. In general the melancholic stage is longer than the maniacal stage, and the intervals are shorter than either. The greatest variability is shown in the duration of the intervals, which are so much more marked the more pronounced the excitement has been.

The termination in true dementia is not observed. The intelligence remains at the same level after the disease has lasted twenty or thirty years or even longer. The patients rarely exhibit premature mental or physical decay.

As a general thing the disease grows weaker in old age, both as regards the duration and severity of the attacks. If the intervals are also shortened and mixed a form of disease may finally be produced, in which only the frequent and rapid, but brief, changes of mood furnish indications of the former course.

The prognosis is unfavorable, and real recovery is never observed. Even temporary amelioration of the symptoms is not a favorable sign, because they may soon be replaced by more severe ones. In very rare cases the climacteric is a turning-point, from which a decided improvement starts.

Although not a few of these patients suffer in old age from apoplectic attacks, no anatomical basis of the disease has been discovered.

We can merely attempt to ameliorate the attacks by means of treatment and cannot expect to produce recovery. The chief indication is the removal of external injurious influences, and this can best be done in an asylum. It is true that the asylum authorities are not inclined to retain these patients, especially the milder cases, because they are very troublesome, but the family suffers extremely and the patients themselves pass through an attack more

easily in an asylum. When the free intervals are prolonged, they may be utilized for temporary dismissal from the institution.

Drugs are most effective in hastening the subsidence of excitement, while they effect little in the beginning of the melancholic and maniacal stages. Potassium bromide, as well as opium and morphine, are useless. The treatment must be conducted according to the general principles which have already been discussed in various places. Good effects are sometimes obtained from keeping the patient constantly in bed.

D. PARANOIA.

In the groups of mental disorders which are grouped under the term paranoia, the most important sign—apart from the symptoms of melancholia and mania which may recur in it—is the systematization of delusions. In melancholia and mania the delusions have somewhat of a fleeting character, and the association of the concepts is not arranged according to a definite plan. This takes place in paranoia. The manifold combination of the other symptoms of mental disorder with the so-called fixed ideas gives rise to numerous clinical pictures. There is still a great lack of harmony concerning their classification, but certain sub-groups are readily distinguished. These are "wahnsinn" and "verruecktheit." * Then follows a third group in which certain terminal states, on the one hand of melancholia and mania, on the other hand of wahnsinn and verruecktheit, coincide, but whose clinical pictures contain no signs which point to the different origins. In this latter group the term paranoia possesses only a secondary significance, and in it must also be included the terminal forms of certain conditions which were recognizable originally as verruecktheit, because they, with all others, have the common feature of confusion, without passing into complete mental imbecility or dementia.

* These terms have no exact equivalent in English. They correspond, in the main, to what was formerly called monomania.

1. *Wahnsinn.*

"Wahnsinn" is a mental disorder in which delusions and hallucinations are rapidly combined into a composite whole, intimately associated with strong affects. In verruecktheit the affects are only accidental elements of the clinical history and disappear rapidly. During completely developed wahnsinn the affects are constantly present as soon as the delusions make their appearance. Hence it exhibits irregular changes in its appearance which are absent to such a marked extent in verruecktheit. It is a more acute form of paranoia which, on the whole, runs a more rapid course and may offer more favorable prospects of recovery. When paranoia occurs in persons with a healthy brain it, appears more frequently as wahnsinn, while verruecktheit rouses the suspicion of previous mental invalidism.

As a matter of course the description must distinguish between the occurrence of depressed and excited affects, although this separation is often wanting in the individual case. The development of wahnsinn with depressed affect has great similarity to melancholia, but the significance of the delusions is greater, even at the beginning of the disease. They refer in a definite manner to the patient's person and often to conditions of his own body. The relations to society are then drawn very rapidly into the circle of these delusions and are brought into relation to anxious feelings and sensations.

We will describe the more violent symptoms of such cases. After several weeks of insomnia and irritable mood, in which the patients draw surprising and disquieting conclusions from harmless perceptions, and concerning whose falsity they do not allow themselves to be convinced, a general restlessness makes its appearance, attended with considerable disturbance of consciousness. No connection between the anxious concepts can yet be recognized in the confused remarks. But in a few days greater outward calm is manifested, and we can obtain correct information from the patient concerning certain

things. Anxious notions link themselves to the still indefinite hallucinations, such as tapping at the window, distant noises, or there may be definite shapes and voices. But the feeling of derogation, of persecution by enemies forces itself rapidly into the foreground of his notions; around this fixed idea many others shoot up, all taking their material from the contents of consciousness, so that a composite whole is again formed. The excited anxious mood does not permit the formation of such a finely systematized plan as in verruecktheit, but all thoughts run together to one point. A living personality remains the central point of the morbid mental life; fear captures all delusions and does not permit their development into a firm structure in such a quiet reasoning way as in verruecktheit, but it does not prevent the selection and combination of individual notions according to a continuous thread; the melancholic patient, on the other hand, simply abandons himself to his anxious notions as a guilty sacrifice.

Although the presence of hallucinations cannot be demonstrated in all cases, this is often possible, and hence, in view of the similarity of the other manifestations, their constant occurrence is very probable. All these part-phenomena of the disease add to the peculiar contents of the delusions; their intimate combination also entails the falsification of the patient's perceptions. His relatives appear strange; they only retain their apparent loving conduct in order to conceal their hatred and evil designs. Their conduct is outrageous because he, the patient, has done nothing wrong. This undeserved misfortune is an undeniable fact; not alone his family persecutes him, but on the street every one looks at him. In the asylum the patients, attendants, and physicians unite in saying vulgar things, in satirical remarks and curses (which are based on hallucinations). The element of feeling in the struggle against such influences is especially distinct in females. Not alone at the beginning of puberty, but also at other periods of life, women exhibit a violent feeling

with regard to the noxious influences. Their fear is not a passive one, which yields to fate, nor does it suddenly lead to violence, but it is accompanied by feelings of painful, unjustified suffering and by the tendency to permanent resistance and struggle. These patients are apt to become violent because all influences revolve around their own person. They are always right and do not listen to any explanation of falsely interpreted remarks and noises, etc. (as is done in verruecktheit), but they speak and gesticulate constantly, and often compel us to restrain them. This is naturally a new proof to their minds, and demonstrates the brutality of their assumed persecutors. The highest grades of fear and terrified resistance are manifested, and such an anxious excited mood, accompanied by definite, systematized delusions and hallucinations, may last for weeks, months, or years, with brief interruptions. The latter are not periods of exhaustion, as in an anxious excited melancholia, but are periodical changes whose nature cannot always be ascertained. It is a very important fact in the consideration of wahnsinn that sleep and appetite remain normal. The good sleep is an important sign in several respects. It is unfavorable because, in doubtful cases, it indicates that firm delusions are present, and hence the mental disorder offers less chance of recovery. The complete rest of the body during sleep permits irritative conditions in the internal organs to moderate, and the nutrition of the body remains good, but the patient awakes in the morning with the same painfully excited demeanor and is tortured by the same ideas of persecution. Hence he talks a good deal during the day, curses and threatens. In other respects his manner is rational. His clothes are carefully handled, he is cleanly and acts properly at the table; indeed, the movements are rarely involuntary, but are held in check. The patient occasionally threatens suicide but rarely carries out his threat; affects are present, but they can be restrained. On special occasions in an asylum, such as social festivities, he may control himself sufficiently to

take part, but soon afterward he again abandons himself to his delusions, which receive a new impetus from corresponding hallucinations. We may also find in the course of the disease periods of external calm which remind us occasionally of a periodical course, but the delusions remain distinct and thus distinguish the condition from periodical insanity.

Permanent delusions, which are associated with violent affect, and usually with an exalted feeling, are chiefly religious, especially as they are almost always nourished by hallucinations. Here we find the inspired prophets who proclaim their divine mission in a loud voice. The affect is so pronounced that, even when confined to his room, the patient cannot restrain his flow of speech. These patients are not so careful with regard to their personal appearance, and they can rarely check themselves voluntarily. Indeed, the highest grades of ecstasy may develop, with apparent rigid inhibition of all movements. The patient sees heavenly visions, Christ, the Virgin Mary, who call upon him to become the apostle, pope, or bride of Christ. These are often mingled with sexual sensations, feelings of the highest bliss and delight. During this ecstasy, which does not, as a rule, last more than a few days, the patient is almost completely insensible to his surroundings. With widely opened eyes he lies motionless on the floor or upon his knees. After the gradual awaking from this condition there is usually a tolerably complete memory of the visionary perceptions, but at first there is no recognition of the diseased element. Their experiences are regarded as true revelations and are often amplified by further similar hallucinations. For some time the patient cannot find his bearings and occasionally does all sorts of queer acts, gesticulates, cries out aloud, or strips off his clothing.

In other cases the ecstasy is not so profound and protracted. The patient is impelled to preach the corruption of the world, to assert himself to be the Saviour, everything being uttered with great pathos. This condition

acquires great dramatic power when the supposed message from heaven is associated with the notion of a struggle against the powers of evil. In the course of time these patients learn to control themselves somewhat, and for a number of days may even recognize that they have acted under a delusion.

This is the way in which recovery slowly takes place. But a subsidence of the symptoms must not rouse inordinate hopes, inasmuch as wahnsinn is one of the less favorable forms of insanity and terminates quite often in confusion. As a general thing, wahnsinn with exalted mood runs a more rapid course than that form which is associated with depression. One year is the average duration in cases which recover. In unfavorable cases the affective basis does not then disappear, the delusions retain their loosely connected systematization, and the transition into progressive confusion is gradual. Finally a certain irritable, silly character occupies the foreground, but not dementia. The terminal stage cannot be distinguished from other disorders which pass into the clinical history of general paranoia.

The two forms of wahnsinn which have been mentioned occur, as a rule, in middle life. The development is not rapid. Careful observation shows a prodromal irritable stage which lasts at least several weeks. As a matter of course the delusions are much more manifold than has been described above, but the various similar manifestations of this kind will be considered under the heading of verruecktheit.

The objects of treatment are sedation and protection. The prominence of the affect requires special attention because its treatment alone offers an effective weapon. Rest in bed is to be recommended; isolation is advisable when illusions are prominent, while true hallucinations become more distinct when the patient is alone. Under such circumstances the patient may be left in the company of others so long as he is not dangerous on account of sudden acts. It is hardly ever possible to keep these patients at

home. Powerful drugs are necessary to keep the affects in subjection, and the delusions usually lead the patient to refuse drugs. Potassium bromide is the most valuable, but only when given in large doses. Its effect may be aided by the use of morphine, especially in violent excitement. We must avoid prolonged baths, packs, etc., because the more conscious patient sees in these baths only inimical attacks; when consciousness is more clouded, as in the condition of ecstasy, all these measures are useless or even give rise to violent excitement.

2. *Verrueecktheit.*

"Verrueecktheit" is a mental disorder in which delusions usually associated with hallucinations are carefully combined, sometimes rapidly, but as a rule slowly, into a progressive delusional system; the combination with affects is accidental and gradually disappears. It is one of the forms of paranoia. Their relation is seen particularly in those cases which, after a long course, terminate in confusion, not in dementia, and exhibit the same symptoms that are found in the wahnsinn, which terminates in secondary paranoia and in some terminations of melancholia and mania. It occurs almost exclusively in individuals with an hereditary taint and always runs an unfavorable course. As its name implies, it is a displacement of the mental personality from its former position, and leads to a permanent and profound change in personality. In the beginning, at least, consciousness is unaffected, and the affects which are sometimes observed are only temporary. As a rule the disease develops very slowly; more rarely it apparently begins suddenly after a short period of irritable depression.

Although verrueecktheit is not simply a morbid intensification of certain peculiarities of character such as occur in persons of very different degrees of culture and stations in life, still it is very common to find among the ancestors suspicious characters who exhibited, for example, an unu-

sual tendency to envy or pride. Such peculiarities are exhibited by the patient even during childhood. He exhibited a liking for solitude, did not take part in the sports of other children, and had no friends among them. At the period of puberty these tendencies became more marked; he lived secluded, devoured by mistrust and suspicion.

The great abundance of forms in which the disease appears necessitates a classification, but we must lay stress upon the fact that the following groups only possess systematic importance, inasmuch as verruecktheit rarely remains within the bounds that will be set forth.

In the foreground of verruecktheit stands the delusion. This may develop from so-called primordial delirium, but is more often associated with hallucinations. Hence follows the division into simple or hallucinatory verruecktheit. A further division refers to the contents of the delusions, which imply either derogation or exaltation of the personality, and hence the groups of delusions of persecution and delusions of grandeur.

On account of its frequency and the completeness of its symptoms we will first consider the hallucinatory delusion of persecution.

Its basis is the development of systematized ideas of derogation as the result of permanent, on the whole monotonous hallucinations. Strictly speaking, these are not fixed ideas, but are, in a measure, variable because the original delusion acts in a falsifying manner upon the remaining contents of consciousness. Hence a progress of the delusions forms part of the clinical history. As we shall see later, a delusion of persecution, for example, may develop into a delusion of grandeur. The delusion also extends gradually to the entire mental life of the patient. The concepts which, especially at the onset, were not yet morbidly changed, and their associations, are therefore only combined in a systematic manner in so far as they are not opposed to the dominant delusions.

This apparent restriction to certain circles of thought is

at first so pronounced that outsiders do not notice any morbid element. Not a small proportion of the patients attend to their duties in the ordinary way, difficult scientific labors may be carried out, and nothing peculiar is noticed in conversation. An occasional smile without apparent cause, a peculiar glance toward the ceiling, soliloquies, etc., are regarded as mere peculiarities, although concealed hallucinations and delusions are already present. Many years sometimes pass in this way. A slight change of manner may have been noticed by the family, but they have become accustomed to it. The delusions and hallucinations often have not obtained convincing reality to the patient, and their interpretation still rouses doubt. But the correct perceptions of the external world are already combined with personal sensations and ideas which falsify the former; something that does not belong to them is looked for and observed. Startled by this fact, the patient endeavors to quiet himself by rational reasons, but only with temporary success, because the vivid distinctness of the hallucinations rapidly overcomes the criticism. This loss of criticism is perhaps a sign of mental weakness; but the judgment of the patient in other matters, which do not concern his person, is still too great to permit us to regard this expression as appropriate. The patient is still astonished concerning the awakening mistrust and asks himself for the cause. But he constantly returns to the idea that some plan has been formed against him, that enemies are attempting to ruin him. He now finds that everything about him is changed. Everything excites his mistrust; people speak ill of him and slander him. Trifling circumstances usually rouse such thoughts. Real misfortunes affect him less and are not attributed to his supposed enemies, while slight events which affect his person are woven into the developing system of delusions of derogation. He now has a special tendency to look back into his past and to combine events which have long passed with the fresh impressions of the present.

An auditory hallucination of an inimical character re-

turns more frequently and grows louder. More rarely its contents are immaterial, but even then it is combined with the delusional system. A physical ailment may effect a rapid change in these concealed processes. In the large majority of cases a disagreeable auditory hallucination now gives a definite direction to the undefined fears. At one blow the concealed contents of long-experienced fears are converted into a terrible certainty. Usually these hallucinations consist of a single word (villain, murderer, pig), often they are a sexual accusation; or they are short sentences of similar import. Startling as this may be at first, its frequent recurrence suppresses every doubt of its reality, and it is often drawn very slowly into the constantly growing web of delusions. The patient hears himself mocked everywhere, in the house and upon the street.

Now the links are formed in a progressive delusional system, in part slowly and steadily in a psychological manner, in part rapidly and by fits and starts on account of the morbid irritative condition in the brain. Usually he then infers from the ever-present danger that a conspiracy of his enemies has been formed. Wherever he goes he finds himself surrounded by enemies and followed by spies. He generally does not know his enemies personally, and makes no further effort to see the persons whose mocking voices he hears. This is a notable evidence of the increasing lack of judgment, because formerly he would open the window or go to the street in order to see his supposed pursuers. He now requires merely an explanation of the process and is apt to find it in physical action at a distance. As one person cannot accompany him everywhere, he must be pursued by a society—Free Masons, Jesuits, secret societies of all kinds, the police. The voices heard are explained by electrical apparatus or the telephone. The telegraph communicates his fate to the entire world. Hence he refuses to answer questions, because the questioner only pretends to be ignorant but is really cognizant of everything. Soon the threats are conveyed to him in all sorts of ways; any newspaper report

conveys a hint of his crimes and is worked up into the growing system of delusions. He finds undeniable accusations and threats everywhere; out of the irrelevant conversation of those about him he picks words and refers them to himself. The people point at him, the preacher refers to him in his sermon, and the street-gamins whistle songs about him.

A great feebleness of judgment has already developed when such harmless matters are drawn without hesitation into the system of delusions. The constant observation disquiets the patient and he attempts to escape. He changes his dwelling or makes a trip. At first this relieves him, because for the first few days the enemy seems to have lost track of him. But soon the pursuit is renewed and the auditory hallucinations again begin. Again he changes his dwelling with the same result, and finally he recognizes, in despair, that escape is impossible from the terrible conspiracy against his honor or his life.

Now the patience of the persecuted patient may become exhausted. For a time he drops his timid and reticent manner and speaks to this or that person concerning their inimical conduct. On the whole, he maintains a passive demeanor. He avoids the outer world, closes windows and doors, stops the keyholes, cooks his own food. But even this seclusion is useless because his thoughts are no longer concealed from his enemies. The letters that he writes are immediately read aloud by an invisible enemy; hardly has a thought developed in his mind before it is expressed aloud. Indeed, the current of innervation to the speech muscles, which precedes the auditory image in point of time, gives rise to words which are spoken before the thought is conceived. He is now entirely in the hands of his enemies, who force their thoughts upon him.

The inner restlessness requires an outlet, and this is effected more frequently by public accusations than by acts of violence. As a general thing he seeks protection from the authorities. Either he unfolds the entire delu-

sional system, and his insanity is then evident at once, or he attempts to make the true reason of his persecutions probable by hinting at facts, and careful examination of all accompanying circumstances may be necessary before the patient's true condition becomes evident. On the whole, however, the authorities pay no attention to the complaints, and, as a matter of course, the patient now assumes that the authorities are in league with his enemies. Higher authorities are invoked; finally, parliament and king are annoyed. As a matter of course, many of these patients have been transferred to an asylum before matters have come to such a pass.

I will now pause a little in the description in order to complete the history in a few details. We have hitherto spoken intentionally only of the auditory hallucinations, because they are so disproportionately frequent and also because they furnish the most distinct idea concerning the nature of verruecktheit. There is sometimes a real, but usually only an apparent absence of auditory hallucinations in verruecktheit. This is probably owing to the fact that the strength of the innervation currents to the speech muscles is not always so great that it appears to the patient as distinct internal speech. These gradual differences between undoubted original notions of his own brain and those which appear to be forced upon him from without, but are really only another expression of the same process, make it so difficult for him to distinguish between reality and deception.

But the disease is very often attended with a series of other hallucinations. Hallucinations of common sensation, especially in the skin and internal organs, are apt to develop into delusions. The knowledge of physical apparatus is generally utilized in explanation. The terms electricity and magnetism are usually employed to cover the indefinite notions concerning the supposed underlying physical processes. The disorders of common sensation consist of vertigo, shocks of the entire body; the bed is drawn upward, the limbs are moved against the patient's

will; burning boring pains alternate with tearing, drawing of the limbs. Even new words are formed in order to express the annoying sensations. It is often difficult to distinguish the real hallucination from its fantastic explanation and amplification, because many patients do not lose the tendency to exaggeration even during the disease. This one complains that his brain is torn out, the other that his spinal cord is removed; this one's skull is opened and shut, the other has a wire drawn through his head; or a stone or one of the other organs has taken the place of the brain. The thoracic and abdominal viscera are very often implicated; they are replaced by wheels, the heart is deprived of blood and pumps only air into the vessels, the rectum is torn out or a mill-stone lies in front of it. All this is done by the secret contrivances of his enemies. They torment him day and night, exchange his limbs, place microscopic animals under his skin, etc. If these feelings, under the influence of superstitious notions, are attributed to a supernatural devilish cause, and if alternating auditory hallucinations confuse the patient's conduct, they result in the delusion of "possession." The enemies, the devils, reside in the patient's ears and deafen him with their terrible outcries, they rise from his belly into his head, they utter blasphemous remarks which he must communicate to the whole world. He preaches the sinfulness of the world and foretells the day of judgment, but at the same time feels himself compelled to cry out against his will. He says that the devil is in him and forces him to such acts. The most remarkable descriptions and explanations are reported by the patient concerning the sexual apparatus, and such notions are supplemented by visual hallucinations. Men see themselves surrounded by naked women. Women experience the act of coitus; at the same time they are usually violent and irritated, slam the doors and break objects; more rarely they revel in voluptuous feelings or perhaps in the thought that they have become pregnant with the Saviour of the world.

In close relation with the feeling of being possessed, which often has a religious tinge, we find olfactory hallucinations. In fact, a division of verruecktheit according to the different forms of hallucinations is not possible, because the auditory hallucinations alone occupy a special position; the other forms are combined in manifold ways. Certain ones, however, are more often found in combination; we have already referred to the combination of olfactory and genital hallucinations which often occur in religious ideas. Sulphur and pitch, poisonous vapors, are conveyed to the patient in the most remarkable ways. The stench comes through the chimney, the cracks in the floor, or specially constructed pipes. The patient plugs his nostrils with cotton, cloth, etc. As gustatory and olfactory hallucinations are often combined, the food tastes like urine and fæces, arsenic, or chloroform. Many of these patients are constantly spitting in order to get rid of the distressing sensations. It is clear to him that he is to be poisoned; he takes the greatest precautions in eating his meals, changes his restaurant at every meal, has chemical examinations made, etc.

Visual hallucinations are the rarest, and generally consist only of shadowy appearances or fantastic embellishments of illusions. At all events the patient suffers much less from visual hallucinations than does the one who is filled with delusions of grandeur.

We will now consider the delusion of grandeur. Apart from the fact that it may occur with or without hallucinations, we must distinguish whether it develops independently at the beginning of the disease or whether it develops out of the delusion of persecution. The latter variety, although perhaps less frequent than the former, will be first considered. In a few cases a logical deduction of the ideas of grandeur from the delusion of persecution may be traced. On account of the constant persecutions to which he is subjected he reaches the suspicion and finally the positive conclusion that he is persecuted because of his resemblance to some prominent individual,

or because he himself occupies some important position. The general observation by others must have some special reason. Now everybody looks at him respectfully, the newspapers furnish hints which make it clear to him that all his persecutions were due to his commanding personality. Increased self-esteem and expansive ideas may thus develop psychologically in connection with the ideas of persecution. But the special character of the exalted ideas depends mainly upon the hallucinations. A feeling of magnetic currents and the notion of awaking suddenly to new life occur in this connection, and hence the change often takes place suddenly. With hardly any preliminary sign the patient suddenly announces that he is a prince, king, the Son of God, the Messiah. This may result from some trifling circumstance, but more often from a true hallucination, especially of hearing. A voice from heaven or the apparition of an angel announces to him his lofty position. Hence verruecktheit so often has a religious basis, furnishing prophets, apostles, the bride of Christ, the Virgin Mary. Corresponding to the original development out of ideas of persecution, a struggle is often maintained for some time between the powers of evil and the divine influences, but finally results in the victory of God's elect. From time to time the struggle is again renewed and temporarily the exalted mood is clouded, but renewed visions, delightful odors, and feelings of pleasure confirm the former opinion. The weakness of judgment is often so great that the patient proclaims himself Messiah and king in the same breath, and this terminates occasionally in a wild mixture of confused ideas of grandeur, which are rarely interrupted by ideas of persecution. But usually the exalted ideas remain constant for years and the patients are accustomed to postpone the fulfilment of their wishes to later times. These individuals do not long remain out of an asylum. The patient, knowing himself heir to a throne, writes letters to the real incumbent. The second Son of God sends around printed pamphlets in which he calls the pope Anti-Christ. Such

harmless acts are often accompanied by dangerous attacks upon others. A supposed slanderous remark induces the patient to beat a passer-by on the street; armed with weapons against his enemies he shoots the one whom he considers the arch-conspirator. Another hears a divine voice, "kill him," and immediately stabs a by-stander; a church or house is put to flames either from revenge or to serve as a shining beacon to the glory of God. On the other hand, he does violence to his own body; self-mutilations, even suicides, are observed.

These patients also become nuisances by their constant complaints to the authorities against their enemies or by the incessant pleading of their cause in print. The one who is suffering from a delusion of persecution is not content with lamentation and complaining, but the most intense feelings of opposition and revenge do not let him rest. He complains to the courts in endless reports, and without even waiting for an answer he may mete justice with his own hands. This constitutes an important difference between the murder committed in verruecktheit and in melancholia. The former is the result of hatred or assumed justifiable resistance; the latter is often associated with feelings of profound pity.

We have just considered the development of the delusion of grandeur from the delusion of persecution, and will now discuss its coincident and independent development.

A patient suddenly receives from a higher power the message, "You are perfect, you will not die, but keep quiet." She does not remain quiet, but tells her experience on the following day; soon afterward she feels and hears that she is damned. But the effect of the message again exalts her, and for a time she looks forward with joy to the day of judgment. At the end of some months a new voice tells her that she may not eat or she will be damned eternally; nevertheless she eats and for years afterward feels that eternal damnation is her lot; instead of being the most perfect creature on earth, she has become the evil

woman, the serpent. This notion in turn disappears after the lapse of years, and the exalted feeling that she is perfect and eternal dominates the further course of the disease. In a similar way we find, from the start, ideas of exaltation and derogation alongside of one another in more or less intimate association. The more violently the disease begins the more closely joined are these apparently antagonistic ideas, and they appear directly out of consciousness without any logical connection.

The same ideas recur in many different patients, and it almost appears as if one had learned them from another. This can only be explained by their original organic development, as in the case of central hallucinations; hence, also, their convincing power, which is so much greater the more vivid the sensory accompaniment in the shape of hallucinations. After a while an arrangement of the antagonistic delusions is effected, and in the course of years they grow together into a system. The degree of logical connection and psychological foundation of the originally independent series of ideas depends upon the grade of intelligence which still remains intact.

A patient states that she cannot rid herself of the idea that she is a princess, and at the same time she hears that she may not eat. She is astonished at the first fact and distressed about the second; she fasts, and only at a much later period does she explain the connection by stating that a period of probation must first be endured before attaining her high destiny. This cerebral mode of development of antagonistic concepts is not really surprising if we remember the rapid alternation of cheerful and mournful ideas in mania and other psychoses.

The new thoughts at first astonish the patient, and it is only gradually that they unite with the fund of ideas already present. It is important to note that profound affects of long duration do not attend the origin of such delusions.

We turn next to the consideration of verruecktheit without hallucinations.

This always presupposes a mental basis which is below par. The acceptance of the delusions is only made possible here by a weakness of judgment which is always either congenital or has developed in early childhood. On the other hand, a so-called original verrueecktheit may also be associated with hallucinations, and then constitutes a variety midway between the already described forms and the simple verrueecktheit which we are about to discuss. There are numerous transitional forms, but a description of pronounced differences should be attempted in order to show more clearly the individual symptoms. But it must not be forgotten that the hallucinatory delusion of persecution and grandeur develops generally on the basis of hereditary taint. If we here attach the chief importance to this early developed basis and if the term original verrueecktheit is not employed for this simple form of the disease, it is due to the fact that this term has become naturalized in psychiatry as applied to verrueecktheit, developing upon the hereditary basis and associated with hallucinations. It would be more correct to apply this term also to the simple forms without hallucinations.

We have to deal, accordingly, with individuals in whom the origin of the disease dates back to earliest youth, peculiarities being noticeable in the child in all the domains of thought and feeling. There is, however, an early distinction in the main direction of thought, either toward the side of derogation or of exaltation, or the combination of these notions is an early one.

We begin with the first form in which self-depreciation constitutes the essence of the disease. At an early period the child feels himself neglected by his parents, brothers and sisters, and finally becomes antagonistic, in a measure, to his family. These thoughts gain more and more strength, and finally they begin to influence his perceptions. He thinks himself neglected by other children and sees hostile distrust in the shyness of boys of his age. Such children are much alone and often have a tendency to extensive promiscuous reading; they meditate and

dream concerning all sorts of queer notions. Derided by his companions the child becomes more sensitive, and from the morbid predisposition the fully developed psychosis slowly grows. Not alone the reproaches of others, called forth by the patient's peculiar conduct, but even the most harmless circumstance is manipulated into a coherent system. A progressive psychological development is usually more distinct in verruecktheit without hallucinations than in the so-called hallucinatory form. Gradually all perceptions become confirmations of the constantly crystallizing ideas of derogation; in married life this appears often in the shape of jealousy.

It is especially interesting to follow the comparatively frequent transition into ideas of exaltation, while the further course of the delusion of persecution in simple verruecktheit is the same as in the hallucinatory form. As a rule these persons have an exaggerated idea of their own abilities even in early childhood. They dream of lofty ideals—the family life is not sufficiently aristocratic. The sensitiveness and irritability in the bosom of the family are the same as in the form of disease just described. As a premature physical development often accompanies the peculiar mental character, they are brought prematurely among grown people. Friendly words and harmless flattery make a deep impression upon these children and give rise to the notion that they are destined for something higher. In their dreams they see themselves members of cultured circles of society, and in waking moments these serve as the basis for building castles in the air. The notion of aristocratic descent now appears occasionally and is supported by the supposed unfeeling treatment at home and the kind manner of outsiders. The suspicion that they are the children of other parents becomes stronger and stronger and requires its psychological realization; this is effected undeniably by the weakness of judgment. In a perhaps real but very slight resemblance to the picture of a ruling sovereign the patient recognizes the secret of his birth. Cautiously he

endeavors to gain information on this point from his parents. They are naturally astonished, perhaps confused, and thus his suspicions are confirmed. The reason of former slights now becomes clearer, and out of the antagonism of self-depreciation and exaltation is gradually developed the coherent series of delusions. According as either of these series predominates, the clinical history may resemble that of delusions of persecution or of grandeur.

The history often receives a special color from erotic or religious elements. In many cases both develop in early youth and increase in intensity at the period of puberty. Religious enthusiasm and masturbation are found associated, but Platonic feelings may also be marked without sexual aberrations. Temptations by the devil alternate with feelings of inspiration; the interpretation of texts in the Bible facilitates the development of a delusional system. The enthusiasm or humility which accompany their faith or doubts are rarely profound affects; they make sport of the feelings of sinfulness and atonement. This constitutes a difference from those cases of verrücktheit in which hallucinations exert full power over action; here we are more apt to find refusal to take food, complete mutism, self-mutilations, and even crucifixion and also violence against others. Another form of the delusion of grandeur develops in the domain of invention or the improvement of existing conditions. Queer originals are always numerous in society; in riots and other forms of social excitement they appear in greater numbers, and not infrequently lead the masses. In quiet times they are a torment to their fellows until some irrational act leads them to the asylum.

As we have already remarked, the independent original development of a delusion of grandeur is very rare, but there are some cases, especially of an hereditary character, in which the ideas of depreciation are rare and so overshadowed by the delusion of grandeur that the former is unnoticed. Hallucinations, especially visions, are gener-

ally present in such cases. These forms, which are always more violent, terminate early in confusion, and the delusion then has a disorderly and monstrous character. Every question provokes fantastic answers. The patient is poet, philosopher, general, discoverer, at the same time; astonishment at such remarks leads to further exaggerations, such as "I am the world, or God."

We find, accordingly, that as soon as we leave the general, somewhat schematic description and turn to a special form of the disease, numerous transitions are found between the different forms of verruecktheit.

Before proceeding further with the general description we will describe the so-called insanity of querulents, which has occasional points of contact with all the varieties already discussed.

Atlhough the individuals who suffer from this form of the disease usually have an hereditary taint, the outbreak of the disease does not take place, as a rule, until a later period of life, though a number of peculiarities had long been evident. The special exciting cause is always some defeat in a court of law. The irritable mood then permits a false interpretation of the actual facts. A tinge of excessive self-appreciation without decided delusions of grandeur causes from the start an irritated opposition to the supposed injuries. Hence the querulent fights for his rights everywhere and avenges every slight with morbid persistence, especially by means of new lawsuits. As hallucinations are rare, very sudden actions are not observed, and at the start the delusions are cautiously concealed. It is then often difficult to arrive at a conclusion. But a certain degree of weakness of judgment soon appears. The regardlessness of consequences in securing his end makes the patient forget his real interests; he sacrifices fortune, health, and the happiness of his family. The more his complaints are dismissed by the courts, the more he believes in the partiality and corruption of the judges. In a morbid reliance upon himself he assumes to possess a knowledge of the law and legal methods and

pleads his own case before the authorities. If reprimanded for his conduct, he demands a change in the laws or resists their execution. An unbounded egoism thus seeks to displace the boundaries of the law; the inner excitement, which is constantly growing more passionate, no longer confines itself strictly to the truth. The disappearance of the last remains of reason is shown by the more and more impudent demands, and the passion, which is no longer held under control, passes all bounds. A more or less pronounced delusional system now develops.

The mental disorder in the shape of verruecktheit now becomes more distinct. The patient becomes the protector of the oppressed. Plans for the improvement of the law, even for the improvement of the general condition of mankind, may make their appearance, and thus there is a transition to a complete form of verruecktheit. But the milder, slowly progressing cases are often difficult to recognize among the original symptoms growing out of the irritable mood. The patients are usually removed to an asylum at an early period. When the irritable mood subsides, we are often surprised at the great degree of weakness of judgment, shown by the unmeasured demands in consequence of the supposed injustice. Sometimes the patient even smiles at his own want of moderation. At the same time we generally find that he has become indifferent to other interests and that his feelings and desires are devoid of mental vigor.

It still remains for us to consider briefly a few phenomena which may occur in all complete forms of verrueckt-heit. The use of peculiar, self-formed words is frequent, generally in association with auditory hallucinations, sometimes with hallucinations of feeling. More rarely the verbal monstrosities are perverse expressions of insane ideas, and this is seen most frequently in the transition of the disease into confusion. A few examples will show the character of these words; the physician is received daily with the salutation, "Rokamohel, Rodababa." One patient calls himself "paraweitzika," another speaks of

"pulanus gekatekowbet," etc. The writing of these patients exhibits the same characteristics.

It is very difficult to give a general description of the outward bearing of the patients, but a common feature in many cases is a certain perversity and crankiness of expression and conduct. But this cannot be attributed to the mental condition, because congenital peculiarities of the skull and face sometimes impart a certain direction to every expression. The more the verruecktheit is based upon the general development of the patient, the more frequently do we also find other malformations, and without exaggerating their importance they sometimes confirm an unfavorable prognosis.

Inequality of the pupils is frequent, but has no great significance. Temporary relaxations of groups of muscles, but not paralyses, are observed, and also occasional twitchings. These may be defensive movements resulting from delusions. Motor inhibition and cataleptic rigidity are rare or seen chiefly in the transition into confusion; the rigidity is often confined to certain groups of muscles. In some cases tension is noticeable in the entire mental condition. These conditions may disappear in a few weeks or may become chronic; the delusions then become less distinct, and a final termination in dementia is to be expected.

Other motor disorders, such as tremor, permanent paralysis, general convulsions, do not belong to the clinical history, but are accidental symptoms. If retention of urine and fæces happens to be present and disease of the spinal cord can be excluded, we should suspect voluntary retention. For example, one patient did not wish to lose the golden contents of his rectum.

Sleep is normal unless disturbed by violent delusions and hallucinations, and the general nutrition is also excellent.

Verruecktheit is one of the most frequent of mental disorders. On account of the numerous cases which appear at the climacteric, the female sex is attacked more fre-

quently than the male. Apart from those cases in which the patients have been morbid from earliest childhood and the verrueckt heit has developed imperceptibly out of the constitutional predisposition, the disease appears, in the majority of cases, at the development of puberty, *i.e.*, the end of the second and beginning of the third decennium. It may begin, however, at any period of life, but most rarely in old age.

The disease usually runs a very chronic course. It is often preceded by a period of depression, more rarely it apparently begins suddenly with violent symptoms, but then the previous development has merely been concealed. As a rule, it progresses by fits and starts, and there is hardly any psychosis which exhibits such protracted and notable remissions. With the subsidence of hallucinations and their accompanying affects, there is a certain improvement in many cases. Although still convinced of the truth of their delusions, the patients are able to restrain them and are not influenced by them in their actions. Slight peculiarities of conduct and the retention of some apparently subsidiary parts of the delusions, together with a certain reluctance to discuss the morbid ideas, testify to the incompleteness of recovery. The patients often dissimulate with great skill in order to obtain their discharge from the asylum.

The terminations of the disease, therefore, are incomplete recovery, a chronic state, confusion, imbecility, or death. Recovery is very rare, but improvement is often so pronounced, especially in delusions of grandeur, that a return to the former occupation becomes possible. The previous weakness of judgment and general mental invalidism persist. The progressive mental decay is more pronounced when the clearly established disease continues for years or even for life. The transitions into confusion and imbecility are gradual. The highest grades of dementia are not observed, as memory is never lost. Death may occur from suicide or accidental complications.

In a psychosis which is, on the whole, incurable, the

treatment can only be directed against individual groups of systems, and even this is extremely difficult in verruecktheit. We already know that these patients, especially when suffering from hallucinations, are dangerous members of society. Hence they should be sent to an asylum, at least in the beginning. After the lapse of time, when imbecility or confusion have destroyed the rare affects, they may be transferred to colonies of insane, to the care of a family, or perhaps to their own home.

3. *Confusion.*

The confusion here referred to is not separated sharply from verruecktheit; its relation to paranoia is indicated by the combination, although not firmly, of former delusions. The series of ideas are only held together by a loose chain. Temporary affects threaten the remainder of the connection while a certain degree of mental weakness is recognizable in quiet thought, and an attempt is no longer made to find a logical basis for the delusion which appears only temporarily in the affect. It is evident, therefore, that this form of confusion may develop from wahnsinn, mania, and melancholia; it is therefore a secondary form of paranoia. The absence of dementia is shown by the fact that the patient can often reason correctly concerning things which do not refer to his morbid personality.

Confusion affords an excellent illustration of the fundamental principle of all mental disorders that notions which appear involuntarily always gain a predominance over those which are selected consciously. Hence confusion is often the termination of mental disease. Thus it is found after melancholia when the violent constant affect disappears, but the delusions remain and mental weakness appears. We also meet with the conditions known occasionally as acute hallucinatory confusion, and which were discussed among the violent forms of mania. If these pass into chronic excitement the confusion becomes more

constant, although remissions recur continually and enable us to recognize that a combination of the delusions is still attempted. Although these delusions form no definite system, they prove that the disease is a secondary paranoia.

There are still other psychoses which either run their course with or terminate in distinct confusion; for example, the mental disorder attending epilepsy and neurasthenic conditions of exhaustion. They hardly ever exhibit a delusional system, because this is not permitted by the obscuration of consciousness; hence this confusion does not belong to paranoia.

Whatever the manner in which confusion has developed, loosely connected series of delusions are more or less distinctly recognizable. But they are lacking in firm systematization, and this is only indicated by single words or sentences; from the frequent repetition of such words and sentences we can sometimes distinguish the morbid psychical condition which preceded the confusion. If hallucinations are still present (and this is true of not a few cases) they usually find a more distinct expression in sudden movements and individual acts than in the confused speech. But both the delusions and hallucinations have lost their compelling hold upon the feelings and actions of the patient. They appear and disappear with equal rapidity. The play of ideas has no internal connection and varies with accidental circumstances. But conditions of greater activity alternate with periods of quiet and increased rationality, in which the patient may give some information concerning the hallucinations and delusions which he has had.

It is difficult to describe the endless varieties in the manifestations of confusion. Even in higher grades memory is not entirely lost, except for recent events. The displacement of the standpoint of his own personality, which formed the centre of the former systematized delusions of the patient, remains unchanged longest. Hence we find, for example, a senseless repetition of large figures, of fan-

tastic images of the patient's own worth; but the talk of millions, etc., has become merely a play of words. Ideas of derogation disappear more readily in the confused speech. Although profound emotions are lacking, temporary excitement is very common and may be attended with sudden acts of violence, so that the patient is often very dangerous. The execution of definite plans is impossible because the will is too unstable. The habits of previous days of activity lead only to the performance of minor mechanical actions and make some of the patients useful members of the household of an asylum.

As a matter of course, confusion develops gradually from the previously mentioned conditions, and transitions may be pictured in all stages; depressed or elevated moods still alternate frequently. A cheerful manner mingled with conceit, anxiety in expression and gesture, malice, obstinacy, are observed. Many patients can answer brief questions, especially those which concern the details of everyday life, but as soon as we ask concerning the cause of their illness or touch upon any of the relations of the mental personality, they rapidly become confused and give senseless, incomprehensible answers. This is most distinct when they are asked to write, as in the following fragment of a letter: "My dear, truly married Emperor William in Berlin! As my truly beloved has been vouchsafed to your loyal right hand and to what belongs to it through the death of your dear Emilia, and as so many hours of grief have been accorded to us, we will with our dear brothers of pain, as you have communicated to my dear Emilia from your couch, so that I can no longer retain my beloved of your absence any longer in my heart," etc. In speaking the flow of thought is naturally interrupted by external circumstances and is drawn into other directions, but this cannot be followed except, perhaps, with the aid of a phonograph. The following will serve as an illustration of confused remarks: "My children poisoned with wine—powder that stunk—your name is—actually murder a woman—fat and oil—the water costs money—

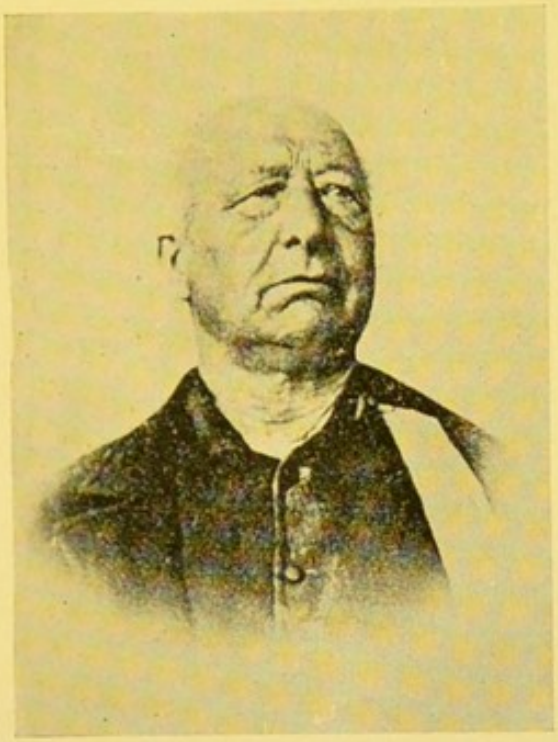
DESCRIPTION OF PLATE V.

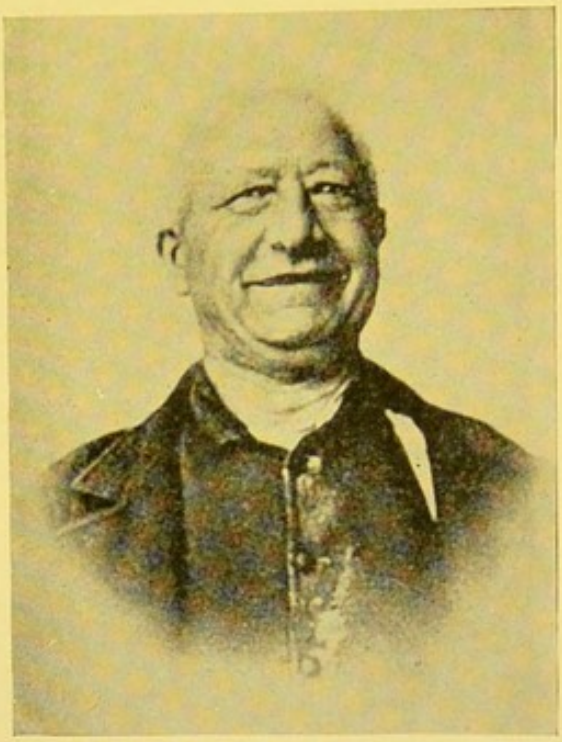
PARANOIA.

CHARACTERISTIC pictures of the variety of paranoia known as wahnsinn could not be obtained.

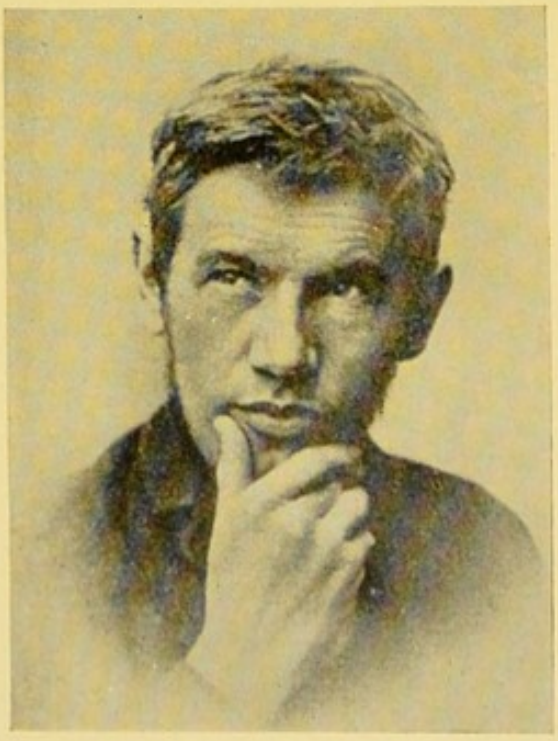
The pictures of the old man illustrate verruecktheit with hallucinations in the form of delusions of persecution. He tasted, smelled, and felt that he was poisoned. Intelligence is undisturbed, and the vigorous expression in the first picture is due to the fact that he wished to show his excellent qualities by means of the photograph. The second picture was taken without his knowledge while he was expatiating, in the midst of his delusions, on his former strength compared with his present miserable condition. This patient often communicates by telephone with his enemies. He then sits with closed eyes, moves the lips gently, and makes slow movements with the trunk. This is shown in the third picture, which was taken without the knowledge of the patient.

The patient shown in the picture to the right and below also suffers from verruecktheit with hallucinations, but confusion has already occurred, so that a system can no longer be recognized in his delusions. Delusions of persecution still predominate, especially as the result of auditory hallucinations. The expression of the face and the position of the hand show cautious distrust, probably as the result of auditory hallucinations then present. The unilateral wrinkling of the forehead is habitual in this patient, is increased by every affect, and must be regarded as a spasmodic condition, perhaps as a sign of degeneration.









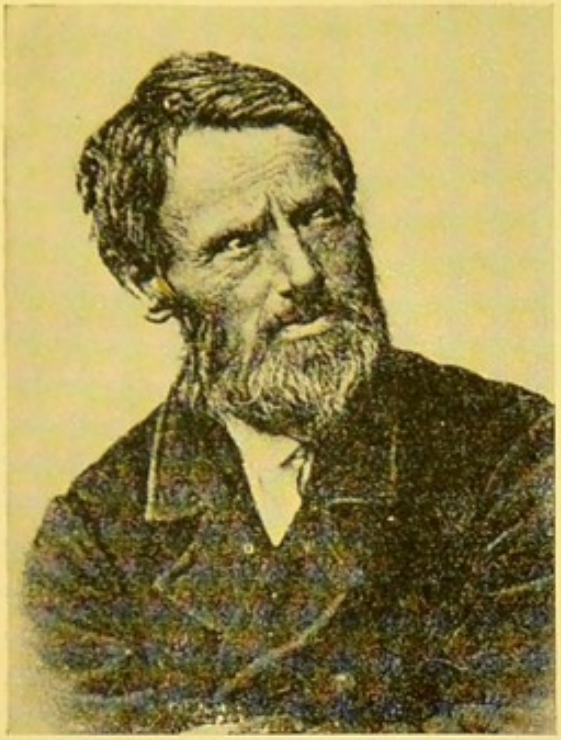
DESCRIPTION OF PLATE VI.

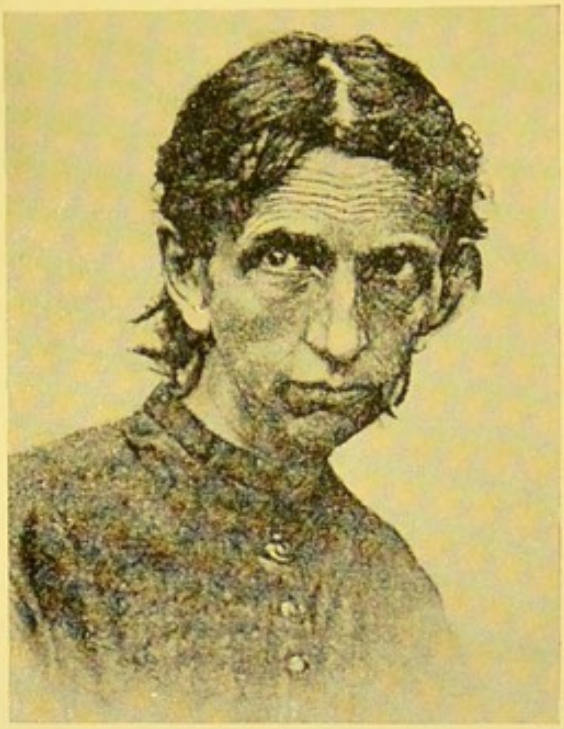
PARANOIA.

THE two upper pictures show patients in whom the most marked confusion has developed out of verruecktheit. The man formerly suffered from melancholic delusions of derogation, and the permanent furrowing of the forehead corresponds to such a mood. The furrowing corresponds very closely to the three sides of a triangle. The lower half of the face no longer presents a melancholic character; the refractory look, the firmly closed mouth, and the folded arms are the expression of dislike to sitting quietly while the photograph is taken. The patient is usually boisterous, curses in a confused way, and talks against "voices."

The woman formerly thought herself persecuted, then regarded herself as a princess, but for years has been entirely confused. She is generally in motion, certain imperative movements being repeated hundreds of times a day. The play of features is spasmodic and often changes, so that it corresponds to no definite expression.

The two lower pictures show verruecktheit with predominance of ideas of grandeur; intelligence is somewhat impaired, but confusion has not yet developed. The patient was very willing to be photographed and explained each time what he meant to express by his position and gestures. On the first picture he speaks "the imperial word in a commanding tone;" in the second one "the Divine word in a singing tone."









miserable I have a large fortune." Here a certain loose connection is still recognizable. It is important, however, to know that the confusion may be entirely absent when simple short questions are propounded. In doubtful cases this is an important differential sign from conditions of mobile dementia in which regular series of thoughts are no longer possible. The confusion under consideration does not pass into dementia; the ability to perform regular, although only mechanical, acts remains intact.

After all affects have subsided, this condition may last for years until death supervenes, and the physical condition, particularly sleep, generally remains excellent.

III.

MENTAL DISORDERS ASSOCIATED WITH PERMANENT ANATOMICAL CHANGES IN THE BRAIN OR WITH GENERAL DISEASES.

Introduction.

We have heretofore discussed functional disorders which are probably due to chemical changes in the nervous substance. After long duration and great violence these may lead to permanent anatomical tissue changes, and hence we meet with some of the terminal forms of the functional psychoses in the present section. This classification is an artificial one, especially when we must here describe diseases without anatomical change, merely because the clinical history is identical with that of allied conditions in which anatomical changes are very distinct. Such conditions are primary dementia and imbecility. The position of these two conditions in this section appears somewhat more justified if we assume that the anatomical changes which their course warrants us in expecting are not found simply on account of imperfect means of examination.

The functional psychoses, after a very violent course, show that the chemical morbid processes lead to tissue changes and in this way sometimes prove fatal. If this fate is escaped, the permanently resulting anatomical changes give rise to symptoms which distinguish them clearly from functional disorders and, as we shall soon see, secondary dementia then develops.

The connection of psychical disorders with general affections of the nervous system and other organs and with febrile diseases is also utilized for the separate description of certain psychoses. This division is also

artificial because simple mental disorders may appear at the same time with such diseases or may even develop in connection with them, without losing their own independence. But in certain cases the psychoses develop from these diseases in such an intimate connection that they thereby receive a special impress. For example, a paranoia upon a neurasthenic or alcoholic basis can only be described in this connection.

Senile dementia and paralytic dementia are perhaps the only psychoses which exhibit a definite relation between the clinical symptoms and the anatomical changes. But we often meet with exceptions, and this is still more true of the other psychoses of this subdivision. Moreover, there are sometimes combinations of the different forms.

It must also be remembered that there are not alone many impure mixed forms, but also undeveloped and therefore indistinct forms.

A. DEMENTIA.

Dementia is acquired as the result of disease, while feeble-mindedness may be congenital or acquired. Dementia may begin the course of the disease and then either disappear or remain permanent, or it is the termination of other psychoses.

The former variety, viz., primary dementia, is a rare disease. It occurs almost entirely among young individuals, occasionally at the period of puberty, but chiefly in men in the thirties, and develops almost suddenly, within a few hours or days. The causes are mental or physical exhaustion, fright or mechanical concussion of the brain, hemorrhages, the puerperal state. The affects are very slight; hallucinations and delusions are absent. Memory is rapidly lost. At the onset a certain restlessness is occasionally observed, and a few purposeless, even violent acts are performed, but soon there is complete abolition of all mental activity. The senses are blunted and respond slowly to stimuli. The ability to store impressions is considerably diminished or entirely abolished, and

there is no trace of voluntary activity. The patient does not answer questions, must be fed, and only eats when food is placed in his mouth. He remains standing for hours in one spot or lies motionless in bed. The face is devoid of expression, the pupils are dilated and react slowly. Sensibility is generally lost, so that even strong electrical currents cause no impression; the cutaneous reflexes are diminished. The muscles are flabby, but in rare cases there is temporary muscular rigidity. The heart's action is feeble, the pulse slow and small; there is often œdema of the feet and the cyanotic limbs are cool to the feel. Sleep is quiet and profound. The temperature of the body is lowered, and the weight often sinks considerably, even if sufficient food is ingested. Respiration is superficial. In the most severe cases the fæces, urine, and saliva escape involuntarily.

As a rule this condition remains uniform, but temporary excitement occasionally occurs, during which the patient sings, whistles, talks incoherently but often in a rhythmical manner. The disease generally lasts several months, but may also terminate in a few hours or days. When the disease terminates favorably, as is true of the majority of cases, the face gains expression, the patient begins to speak a few words and to perform a few movements slowly; he grows cleanly at an early period. The nutrition improves and recovery gradually becomes complete. The memory of the period of disease is generally extinct or very imperfect.

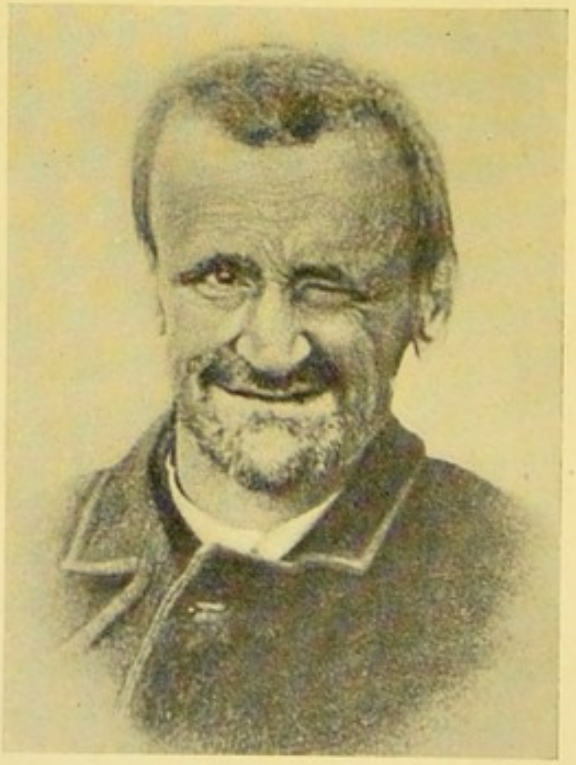
Recovery may be aided by good food, wine, beer, iron, etc. Careful attention to the skin, lukewarm baths, and keeping the body warm in bed also act favorably.

A rarer termination is that of permanent dementia, and this is similar to that observed after other psychoses. In this event the grave turning-point will be recognized by increase in the bodily weight while the other conditions remain the same. It is not always easy, when the period of observation is short, to distinguish it from severe melancholia. But the consideration of the causes and the









DESCRIPTION OF PLATE VII.

MOBILE DEMENTIA.

At first sight we will not recognize the expression of dementia in the adjacent pictures, although the individuals were completely demented. Hence the pictures show the important fact that the facial expression of the insane very often does not correspond to the mental condition. This shows that the actions, speech, and demeanor, past and present, must all be compared.

The girl shown in the two upper pictures was formerly maniacal; her play of features is not volitional. She exhibits great bodily restlessness, with a tendency to striking and biting; she sings, hisses, threatens, but the words employed present no coherence.

The expression of the woman in the lower picture is produced voluntarily and is due to a theatrical tendency. The mouth and eyes are wide open, hence the forehead is wrinkled and the eyebrows arched; the elevated and extended hands aid in producing an expression of astonishment and fright. The much more violent affects of profound mental distress and horror are expressed in a similar way, but they also exhibit rectangular furrowing in the middle frontal region and various vasomotor signs, such as dilatation of the pupils, acceleration of respiration, etc. All these signs are absent in our patient.

The picture of the man also shows a purposeless play of the facial muscles. The upper half of the right side of the face exhibits melancholic elements; the right half is grinning.

DESCRIPTION OF PLATE VIII.

DULL DEMENTIA.

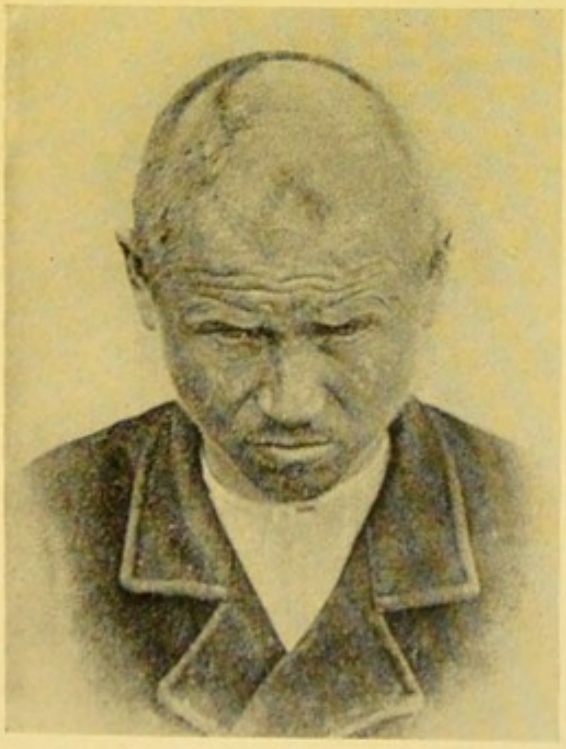
THE adjacent pictures also contain elements of melancholic forms of expression, because they represent terminal stages of melancholic forms of disease, although the patients are completely demented. The pictures of the woman were taken after an interval of several weeks and show very well the rigid, stereotyped expression of a melancholia which has passed into dementia.

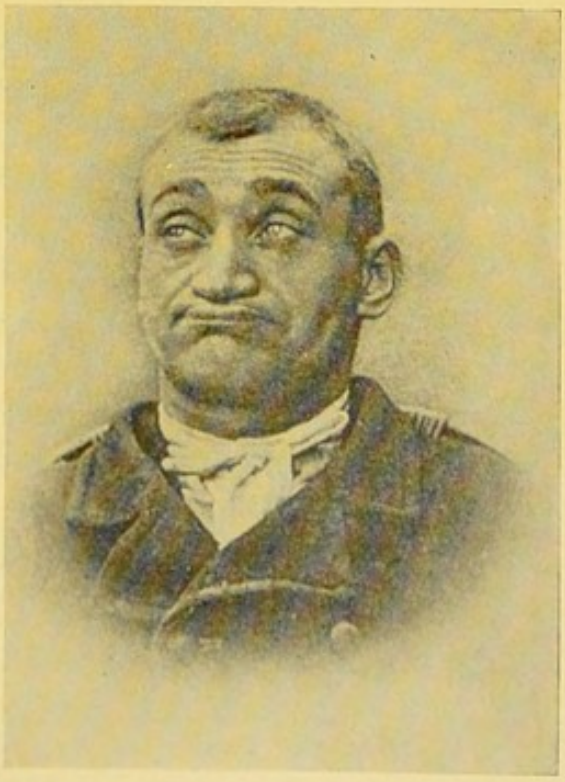
The wrinkled brows of the young man on the left also indicate previous melancholic depression; he has been demented for years and sits mute, but occasionally tears his hair and picks off the skin of the face and scalp; this is shown by the light spots and the bald head.

The young man on the right is also mute; his previous history is obscure. His general bearing and gait seem to indicate increased self-esteem, and this does not appear to be contradicted by the facial expression. But as a matter of fact he is completely demented and makes terrible grimaces. He has become a veritable expert in movements of the mouth and displacement of the integument of the forehead. All the movements are made in a quiet, dignified manner, while the hands are crossed on the back or the arms folded on the chest.









distinct melancholic depression, the disordered sleep, and the occasional manifestations of the vivid mental life will soon enable us to arrive at a diagnosis.

The second form of dementia, so-called secondary dementia, is a terminal condition of other mental diseases and is very frequent. When the highest grades are reached it usually remains permanent, but it may also undergo notable improvement, although it never disappears entirely. It is divided into agitated and apathetic dementia.

In agitated dementia there is more or less excitement. The patient exhibits a disconnected frivolous dotage and mobile grimaces. We find a stupid play of expression, without vivid affect: stupid smiles or tearful grimaces, a childish, foolish, stupid demeanor. The patients run to and fro, laugh, dance, and sing; some are constantly cheerful, others are tearful, others exhibit alternations if disturbed in any movement. Many perform monotonous movements in endless repetition, sometimes of a very complicated character, for example, grasping the right ear with the left hand and at the same time touching the nose with the right hand; brushing and picking at the clothes, etc. It is possible that these movements were originally the result of delusions or hallucinations, but now they are independent. They are the direct results, without psychical intermediation, of the irritative condition of the cortex, which is supposed to result from progressive destruction of the cerebral tissue.

Mobile dementia is, clinically, often a transition to the apathetic form, into which it generally passes after it has lasted a sufficiently long time. Despite their outward activity the patients have no comprehension of questions. Uncleanliness is the rule. The restlessness occasionally persists at night; the nutrition then suffers and does not improve until the transition into apathetic dementia takes place.

Finally, the highest degree of dementia is found in the apathetic form. This is mental death. It might be sup-

posed that we had to deal with beings deprived of the brain did not the continuance of the vegetative functions testify to the activity of the lower centres. All independent action is wanting. The patients must be fed, washed, held when attending to the wants of nature. With expressionless features and relaxed muscles they sit immovable for days in the position in which they have been placed. Saliva flows from the mouth, mucus from the nose, the urine escapes into the clothes, and the fæces are passed unnoticed. Speech ceases, and merely inarticulate cries may now and then accompany a temporary excitement; sometimes the patients may bite and scratch when they are stimulated. The movements performed are slow, the muscles are flabby. Nutrition is often excellent, and great obesity may develop. This condition may last for years before death ensues. As a general thing, however, death follows soon as the result of the poor circulation, pneumonias, and exhausting diarrhœas.

The sole treatment consists of careful nursing. As not a few cases of secondary dementia show no anatomical changes in the brain, and as these are the cases which, as a rule, end in death with comparative rapidity, the pathological changes found in another series of cases must be regarded as results rather than as causes of this form of dementia. The most frequent change is general atrophy of the brain, with dilatation of the ventricles; meningeal opacities and thickenings are less frequent. The microscopical changes consist of accumulation of fat and pigment in the ganglion cells and dilatation of the capillaries, with accumulation of granules in the sheaths. It is probable that the number of negative cases would be diminished if we excluded the milder cases of mental weakness. Clinically, imbecility is also entirely different from dementia, however numerous the transitions may be.

B. SENILE DEMENTIA.

Senile dementia is a mental disorder which is accompanied by diffuse atrophy of the brain, and is either the

termination of a melancholia or mania acquired during old age, or it appears from the start as a condition of mental weakness. The latter form will first be discussed. It is associated with the physiological involution of the brain, and hence there are numerous transitions between the diminished mentality of old age and true dementia. In some cases prodromata are almost entirely wanting, but usually the dementia develops gradually.

Forgetfulness first becomes noticeable. Memory for recent events first fails, while the memories of early childhood may be even more vivid than usual. A certain loquacity and tendency to diffuse repetition of the same stories may increase this appearance, but these very repetitions show that memory is impaired. If this forgetfulness is noticed by the patient it leads him to make false statements as a sort of excuse for his conduct. He becomes irritable and mistrustful; if he mislays anything, he maintains that it has been stolen or mislaid by others. The same mistrust induces him to conceal things, in order to guard against robbery. He often does not know his own property and appropriates that of others, without any special tendency to theft. He exhibits a restless, busybody manner. By day and night he rummages among old papers and other objects. A brief tired feeling often overcomes him during the day, in the midst of a conversation or during a meal. He pockets useless objects, valuables, tools, stumps of cigars, etc., and offers violent resistance when an attempt is made to take them away. His restlessness drives him into the street, where he makes senseless purchases, and only returns home by accident or after going a round-about way.

Soon the patient mistakes windows for doors or may injure himself severely; he handles dangerous articles regardless of danger to himself or others. Many commit gross offences against good manners and morals, make sexual attacks, especially upon children. The sexual sense, in general, is intensified and the impossibility of normal gratification leads to many immoral acts.

Obstinacy, vanity, and great selfishness are added to these symptoms; resistance to impracticable plans rouses the temporary anger of the patient. The extinction of emotional life is shown in the lack of sympathy toward his family; any affects which may be noticed are superficial. The patient often fails to recognize his own relatives and forgets their names.

At this time the anatomical basis of the morbid process is often manifested distinctly by slight spasmodic seizures, temporary paralyses of single nerves, vertigo, aphasic disturbances. Remarkable improvement may also be noticed, but in general the dementia increases progressively. The patient dresses wrongly, puts his legs in his coat, draws his stockings over his hands, attends to the wants of nature wherever he may happen to be, and handles the excrement.

As a rule, hallucinations and delusions are absent in this pure form of dementia. As a matter of course, they may be present when the condition has begun with melancholia or mania. A feeling of loneliness is expressed; statements are also made that nothing exists, that the world has been destroyed. Definite delusions relating to the patient's person are also found, such as that he is not provided with food. Imbecile ideas of grandeur are most frequent, such as revelling in gold, which is looked for in the hands that are smeared with fæces. There are rarely true hallucinations, usually only errors of observation.

This sad picture is sometimes relieved by the retention of some pleasant traits of the former life. In fact, the childlike, not the childish and foolish elements, may predominate. When the naughtiness of childish conduct, uncleanliness, and violence predominate, the interruption of the course of the disease by apoplectic attacks may prove a real relief to the family. Now the bodily decay becomes prominent; the voracious appetite is replaced by anorexia, often on account of digestive disturbances from overloading of the stomach. Insufficient sleep accelerates the decay of the vital energy, and the patient is compelled

to take to bed. Somnolence may next develop. On awaking a slight excitement may begin, but finally the word-images are lost as an expression of ideas. The dementia is gradually shown more and more in the expression, and apathetic dementia is often the termination unless death results from some bodily disease, such as pneumonia or intestinal catarrh. Death often results from simple loss of vitality. The extensive calcification of the arteries which accompanies the disease is also shown by the pulsus tardus. Irregularity and changes in the size of the pupils are often observed. Other motor disorders, such as asymmetry of the face, tremor of the limbs, and especially of the muscles of speech, are not uncommon.

The disease rarely develops before the age of sixty years; in the few cases which begin between the ages of fifty and sixty years, premature senility is manifest. The disease generally lasts several years, in rare cases only a few weeks.

Treatment can effect little. The main elements are good food, stimulation of the circulation, cleanliness, and nursing. Restlessness at night is relieved by light beer and wine and by narcotics, such as opium and morphine. Chloral hydrate is a dangerous remedy on account of the brittle condition of the vessels and the senile changes in the heart.

The anatomo-pathological changes are important. The parietal bones are often very thin, occasionally transparent from disappearanc of the diploë. Marked thickening may be observed in other places. Extensive pachymeningitic deposits, adhesions of the dura to the skull, and hæmatomata are frequent. There is an excess of serum in the dural cavity. The pia mater is often thickened and opaque and contains calcareous plates and large Pacchionian bodies. The size of the brain is diminished, its weight lessened, the fissures gape, and the convolutions are narrow, especially in the frontal lobes. The gray matter of the cortex is atrophied and the lamination oc-

casionally obliterated. The white substance is anæmic and there is often distinct atrophy of the fibres, with increase of the neuroglia. The ventricles are dilated, and there are occasional spots of softening in the cortex and white matter. The ganglion cells usually exhibit atrophy, fatty degeneration, and accumulation of pigment. Atheromatous degeneration of the vessels is frequent, but does not always extend to the capillaries.

C. PARALYTIC DEMENTIA.

Paralytic dementia is a mental disorder which is characterized by mental weakness, progressing rapidly to dementia, and is regularly associated with increasing motor disturbances and vasomotor paralyses. The clinical history varies greatly, according as profound affects with delusions are present or not. Most frequently there is a distinct expansive mood during a certain period of the disease; more rarely there is a depressed mood or a simple demented condition without affect. We will first describe the first and more typical variety.

Paralytic dementia is attended with a definite anatomical change in the brain; it is mainly a disease of mature life in the male and always terminates unfavorably.

The disease never begins suddenly, and indeed, as a rule, certain morbid signs have appeared and disappeared for several years. At first the disturbances are general in character: general malaise, irritability, frequent headaches. The pain in the head is often annular or consists of a feeling of pressure; sometimes the sutures are especially sensitive. The mood is irritated, often almost melancholic, and is usually out of harmony with the existing circumstances and with the mood of healthy days. Hence the disease has been called a progressive change of character, accompanied at an early period by certain signs of mental weakness. The latter feature is shown most distinctly by the great forgetfulness and the readiness with which exhaustion occurs after mental work. At times the patients

cannot bring themselves to do any work at all. The weakness of memory affects chiefly the events of the present and the immediate past. The ability to retain new impressions is lost; a visit, a meal, a matter of business are forgotten at once. In comparison with what the patient is still able to do, his exhaustion appears inexplicable to his family, and they reproach him for his want of energy. All mental work which is attended by independent decisions becomes more and more impossible, while mechanical routine work can be performed for some time longer, although carelessness and omissions are early noticeable. At the same time, or soon afterward, the patient is annoyed by more violent headache with scotomata and pains in the eyes and tinnitus aurium; his interpretation of the present now becomes inaccurate, and consciousness is clouded in a measure. A notable improvement in these symptoms now takes place, as a general thing, and they are replaced by other irritative conditions; difficulty in breathing, fulness in the stomach, pains in the limbs, and hence insufficient sleep. Finally, slight disturbances of individual motor nerves are found very often as prodromata of typical paralytic dementia. Occasional awkward movements of the tongue, temporary twitchings of the face, unilateral facial paresis, or tremor of the limbs, are observed even at this time, so that all the signs of the fully developed disease are indicated, viz., beginning mental weakness, vasomotor changes, and motor disturbances. The combination of these signs is important in distinguishing dementia paralytica from neurasthenic conditions, in which mental weakness is wanting. Moreover, the paralytic dement notices very little or nothing of the change in his mental condition, while the neurasthenic makes this change the central point of his mental interest.

While the disease progresses in every direction, the blunting of the feelings deserves special mention. The indifference to sad and joyful events within the family circle is especially striking if the patient has been a man

of delicate feelings. Corresponding losses are also observed in the æsthetic domain. The patient loses all interest in art, science, and other higher intellectual pursuits, and exhibits a striking preference for coarse sensual pleasures. True irritative phenomena, with excited or depressed mood, are still absent, while distinct mental weakness and helplessness are found in all psychical processes, and the inability to concentrate the attention becomes greater. The patient appears very absent-minded, hardly notices what is going on about him, or his perceptions lack their former clearness. The uncertain interpretation of external impressions increases the weakness of memory and unites with it to form a condition of dull brooding. If the mind is somewhat clearer, the deficiency of judgment becomes so much more striking during conversation. Even at this time fantastic additions are made to stories if their reality is disputed, or violent statements are made as an expression of the irritable mood of the patient who has been detected in exaggerations.

Perversities of action now become more prominent, particularly in æsthetic matters. Gross offences against customs, laws, and morals accumulate. The patients begin to drink a good deal, frequent low resorts, address women on the street in the most vulgar manner. In society, upon the street, or in front of the open window they expose their genitals without noticing the impropriety. Money is wasted in the most extravagant manner and senseless purchases are made. When their money is wasted debts are contracted, but their payment is entirely forgotten. All these acts are attended with an indescribable equanimity, which is undisturbed by any remonstrance, simply because the events do not reach the level of fully conscious judgment. These symptoms may exist without marked excitement or distinct delusions, so that the patients create the impression of drunkards. This is understood so much more readily in view of the fact that very small amounts of alcohol suffice to excite the patient. But the same conduct often continues long after the period

of action of the alcohol, and the internal excitement is now manifested by the tendency to make numerous plans, often merely by the repetition of visits to friends and acquaintances, or even to strangers.

At this stage we find quite constantly a slight obstruction to the tongue, which becomes more distinct when the excitement increases, together with slight associated movements of the facial muscles in speaking and slight tremor of the hands. This is sometimes associated with vertigo or spasmodic attacks, after which the patients very often recover somewhat of their mental tone. In an equal number of cases, however, these mild attacks are the boundary between the complete psychosis and its prodromata. At the close of the prodromal period the mood is extremely capricious, passing directly from cheerful carelessness to morose tearfulness and reckless anger. This irritability, on the one hand, and the ready exhaustion, on the other hand, show most clearly the mental weakness in the condition of the paralytic, although it is unnoticed by the patient.

It is an astonishing feature, however, that the patient's conduct is wrongly interpreted for a long time by those around him. Thus, officers still continue in service despite gross carelessness and irrational, often inhuman treatment of their soldiers, and officials and merchants are regarded as merely nervous despite the greatest disorder in their papers. It is only when distinct delusions and other symptoms become marked or some single action brings the patient in conflict with the criminal law that the eyes of the family are opened.

Although the variability of the mood often leads to sad notions, they are rarely prominent for a long time; but the delusions, which soon make their appearance in an expansive form, are preceded for a longer or shorter period by depressed delusions. The latter will be considered in detail in the discussion of the depressive form of the disease. Here we will at once discuss the ideas of grandeur which develop, usually after a depressed interval.

As a matter of course, the transition from the prodromata to the complete disease is not abrupt, and at first we find only indications of the ideas of grandeur. The restless patient becomes enterprising and eager to improve things. He determines to change his occupation and to instruct the authorities in their duties. He telegraphs here and there, and buys things in the most foolish and extravagant manner, for example, a dozen coaches and twenty parrots, etc. So long as he is not restrained the expansive ideas are manifested by such acts, but when restraint is exercised, as in an asylum, the mental weakness appears. Instead of then attempting to gain his desires forcibly, he is content to revel in the increased flight of his ideas. There is a remarkable similarity in the contents of these ideas, varying slightly with the social position, education, race, sex. Men speak of size, riches, power, and glory; women of dress, love, and children. The patients are colonels, generals, princes, kings, and are called to lead the nation, the world, the universe. They own castles and palaces whose walls are made of gold. They possess enormous treasures, beginning with hundreds of thousands and soon reaching millions and billions. Their liberality is unbounded and they dispense titles, offices, and treasures to their relatives, friends, and others. The patient often has no distinct notion of the monstrous character of his statements, but much of it is mere boasting; this is shown especially by the facility with which the exaggerations are increased when doubt is thrown upon them. The patient is fond of bragging, and if he has just given away thousands and more is asked, he is at once willing to give millions. But he rapidly forgets this, and may state that a present of a few dollars is in itself a liberal one. It is also surprising when we find that such a boaster himself begs for a nickel or is happy at the gift of a cigar. Immediately afterward he says that he is the emperor or God, that he understands all the languages of the world. When asked to speak in a foreign language, he declares that he has forgotten it or makes some empty excuse.

He does not attempt to combine his delusions into a system, and the ideas of grandeur are loosely strung together; fanciful additions to his thoughts are usually wanting, and frequent conversations almost always reveal a great poverty of thought. The monotony of the constantly recurring monstrosities shows the mental weakness. The apparent productivity is often the result of the questions put to the patient. The size of his assumed possessions often transcends his vocabulary, and he is compelled to coin words in order to describe them. The boundaries of time and space disappear, the laws of nature and probability are transgressed without hesitation. One patient possesses one hundred elephants with which he ploughs the land, horses that play on every instrument and speak different languages; he builds a railway of emeralds and rubies to the skies; he lives in a diamond palace, from which roads, made by himself, lead across the entire earth, which he rules. Contradictions to former statements are not uncommon. If the patient attempts to assume a dignified appearance or majestic walk, this is often at variance with his miserable, uncleanly exterior. While he invites mankind to great feasts at tables miles in length, he walks about in torn clothes and with dirty hands.

The direct outcome of the idea of grandeur from the morbid processes in the brain is sometimes shown when a depressed mood appears temporarily. But exaggeration remains the special sign; the patient says he has squandered billions, must remain in prison for thousands of years. Such moods are often associated with slight attacks of vertigo.

Another group of ideas of grandeur refers more closely to the patient's own person and bodily sensations. These notions often become more prominent when the height of the excitement is passed. Everything appears rose-colored, he is young and beautiful, is strong enough to overcome hordes of the strongest men. He has an iron chest, can fly or jump over church-steeples. When his pupils are examined, he maintains that they are three yards

wide. He boasts of his appetite, eats stuffed elephants, can drink a thousand bottles of champagne. His sexual desires can only be gratified by an innumerable number of women. Female patients give birth to the most beautiful children, all twins or still greater number at a birth. They have three or more husbands. In general, the expression of ideas of grandeur in women is confined within more modest bounds than in men.

Similar ideas are entertained with regard to mental ability. The patient is a poet and musician of the first rank, writes all the law-books of the world, his thoughts are all noble and great. With his waking thoughts he mingles the fancies of his dreams.

Although there is a certain monotony in the repetition of the same ideas of grandeur within definite boundaries, there is within these limits a great variety of ideas which change from minute to minute. Although they often resemble one another for long periods, even during the entire duration of the disease, there are many in which, for example, a patient who first called himself a wealthy sovereign afterward proclaimed himself a great artist. Fixed delusions are not present, but certain ones predominate, around which other fleeting ones spring up and disappear. The latter often lead the observer to suspect poetic fancy and bright thoughts, but repeated observation enables him to recognize the dulness.

Although hallucinations may be entirely absent, they are not very rare in the different periods and forms of the disease. In the expansive form, especially in the period of excitement under consideration, visual hallucinations chiefly occur, such as angels and glistening shapes. Auditory hallucinations are rare and the increasing dementia makes them more indistinct.

The increasing failure of memory deserves further notice. All measure of time is lost; the patient does not know whether he has been in the asylum for days or weeks and is ignorant of the day of the week. He forgets names, gives a wrong date to his birthday.

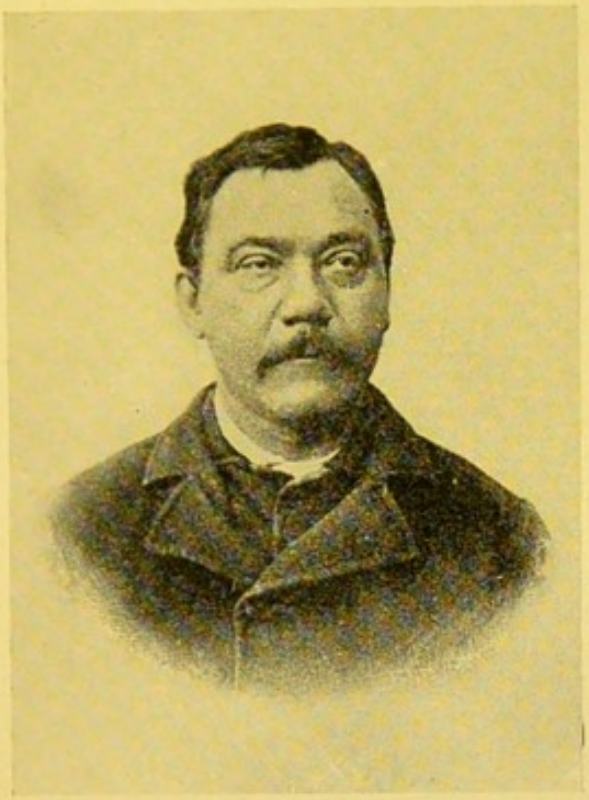
DESCRIPTION OF PLATE IX.

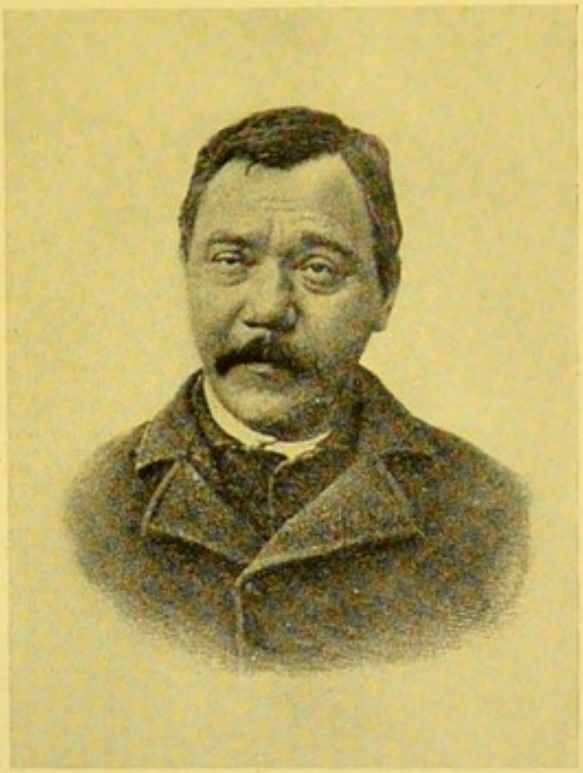
PARALYTIC DEMENTIA.

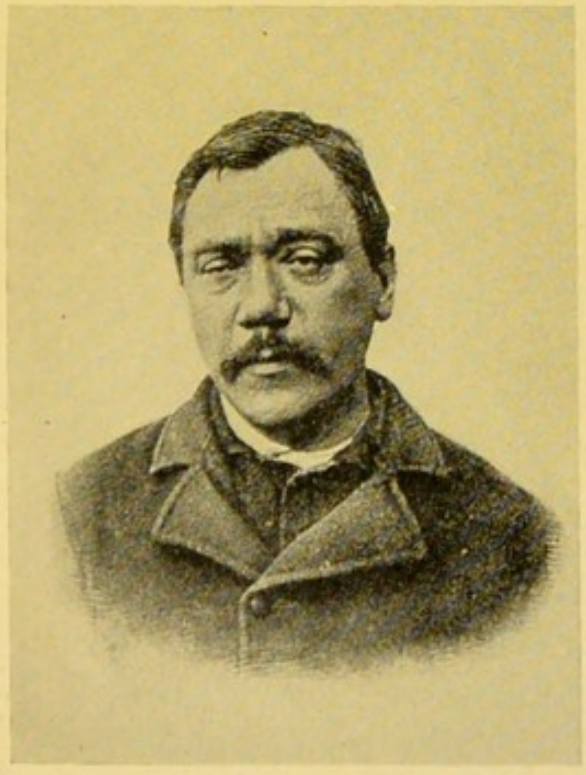
In special cases this form of disease may present any of the forms of expression shown in the previous plates, but the most important signs are the paralytic phenomena, or rather the enfeebled use of individual groups of muscles. Several pictures of the same individual appeared to be best adapted to convey an idea of the twitchings and irregular paresis.

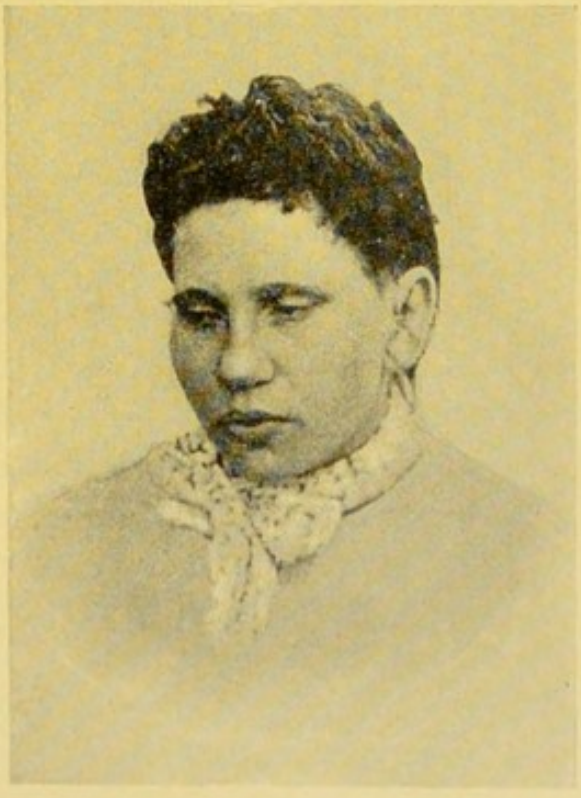
In the first picture the man consciously sat for his photograph and therefore assumed a comparatively intent expression. His attention was then diverted and he was directed to say "photography." The attending difficulties led to irregular spasmodic contractions of the muscles, and the difficult movement of the mouth is shown in the picture. The distress resulting from the inability to articulate the word is shown by the rectangular crossed furrows in the forehead. There is also a decided difference between the two sides of the face. In the picture to the right the right eyebrow is more wrinkled, the left eyebrow is more elevated, and there is a corresponding increased furrowing of the forehead. The third picture shows these phenomena to a less extent, but there is more marked paralysis of the levator palpebrarum on the right side.

In the picture of the girl the slight ptosis of the lids is bilateral. Otherwise the expression of her face is perfectly vacant. The ear exhibits a shrunken hæmatoma.









Numerous bodily disturbances also occur, usually at the same time as the psychical symptoms, sometimes earlier, but also often later. They belong to the entire clinical history, but for the sake of clearness must be described separately.

Speech and voice are first affected. Articulation is interfered with by tremor and irregular twitchings of the muscles of the face, lips, and tongue. The tremor begins generally near the naso-labial fold and in the upper lip. The originally fibrillary twitchings are seen more distinctly when the patient is excited or begins to speak. After a few words have been spoken, the twitching disappears for a few minutes. In connection with other suspicious symptoms, it may permit a very early diagnosis, as it is rare in other psychoses. It is seen occasionally in melancholia, more often in neurasthenia, and may also be a prodrome of bulbar paralysis.

Notable differences in the innervation of the facial nerves may be found at an early period. The two halves of the face become dissimilar, and we find imperfect marking of the grooves in whose vicinity twitching of the muscles takes place. One naso-labial fold is shallow or obliterated, the angle of the mouth is lowered; this side of the face has less mimic expression and its contractions are slow. True paralysis, however, does not exist, and indeed complete paralysis is very rare at any period of dementia paralytica.

The movements do not correspond exactly to their object; they are uncertain and irregular. Hence the motor disturbances are most marked when fine, complicated movements are to be performed. Thus, long before paralysis of the lips, tongue, or palate is noticeable, we find a disturbance of speech, due to insufficient quickness and accuracy in the co-ordinated contractions of the groups of muscles employed in articulation. The speech disturbance of general paresis is an inability to combine letters into syllables and syllables into words—it is essentially a disorder of articulation, but also of co-ordination. The letters

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forming a syllable are properly enunciated singly, but they are combined with difficulty. This is also true of the combination of syllables into words; some syllables are omitted, others repeated, others placed in the wrong position, so that the condition has been called syllabic stuttering. During the development of these disorders the exhaustion of the muscles becomes more distinct with their repeated action. The tongue is protruded in short jerks, because the requisite power is wanting and the patient is uncertain with regard to the amount of force required. Hence, when directed to protrude the tongue, it is only advanced to the lower lip. The patient then makes the queerest attempts to protrude it, even uses the fingers for this purpose; at the same time associated movements occur, such as wrinkling of the forehead and opening of the eyes. In speaking, the final syllables suffer most. The indistinct enunciation of syllables may be spasmodic, as in stuttering, or a slow dragging of a syllable, as in scanning. Certain labials and hissing sounds suffer particularly, the mouth being opened as little as possible; when the lips are pressed together too forcibly, speech may be entirely abolished for a time. At times we hear a sudden improper accentuation of individual syllables or words.

In the description given we find a combination of several disorders of speech, which are described separately as syllabic stuttering, stammering, scanning, bleating, lisping, hesitation, and tremor. It is difficult, however, to make such sharply defined distinction, especially in paralytic dementia, because the anatomical changes may occur in all those tracts to which the speech disorders may be attributed. These domains are the beginning and end of the cortico-bulbar speech tract; in the cortex, probably near the motor centres of the central convolutions, we must look for the co-ordination of speech expressions, in the medulla oblongata for the formation of the elements of speech (vowels and consonants). As the anatomical changes do not occur uniformly or at the same time in all

these tracts, the distinctions between the various speech disorders are partly obliterated, and our description has been confined, therefore, to the actual facts ordinarily observed. But the more the disease is confined to the cortex, the more distinct becomes the disordered co-ordination of the word as a unit composed of elements and syllables, and these are jumbled up, either because the sound memories are vague or because their coaptation is carried out improperly. If the disease has developed in the medulla oblongata, we find the interference chiefly in the production of elements; at the same time the movements of the tongue, cheeks, and lips are disturbed in mastication, deglutition, whistling, etc. When the disorder is mainly in articulation, the clinical history is closely allied to that of numerous other diseases of the medulla, such as multiple sclerosis and true bulbar paralysis. Hence, only that disorder which has its origin in the cortex can be regarded as characteristic; in a few pure cases this can be recognized separately. It is questionable, however, whether the disturbance described as thick speech should be referred to the cortex or the medulla oblongata. The phrases "truly rural," "national intelligencer," and the words "electricity," "initiative," etc., are especially adapted to bring out the speech disturbances in question.

The matter becomes still more complicated when phonetic disorders appear. The degree of tension of the vocal cords is sometimes permanently impaired, speech becomes whispered, monotonous, lower in pitch. Occasionally the patient becomes hoarse or makes improper use of his air supply and the tension of the vocal cords. For example, if the first sounds were too loud the voice soon sinks to a whisper, and finally the breath fails completely. The changed timbre is especially evident in singing. All these disturbances depend mainly on the innervation of the laryngeal muscles, but disturbed mobility of the velum palati is also shown by a nasal voice.

An important proof of the speech disturbance of para-

lytics is found in reading aloud. Wrong words are read, because the patient either mixes up the syllables of the printed words or replaces the words by others which are allied in meaning, sound, or appearance. At the same time the letters composing these words may be pronounced correctly, but difficult words are articulated by the introduction of easier letters. There are also cases in which the latter disturbance of articulation is absent and the pure disorder of co-ordination appears. Syllables, especially terminals, are added to the words and sentences of the text, some words are replaced by others of an entirely different meaning, and in this way a new and incoherent text is created. Repetition of the reading brings forth constantly new combinations of syllables and words which only possess a remote resemblance to the original. At the same time the patient thinks he has read correctly, although he fails to understand the text. This disorder in reading sometimes precedes that in speaking.

We must now consider the disorders of speech which depend upon disease of other parts of the cortex. Not infrequently we observe temporary attacks of true aphasia, consciousness being either abolished or more or less impaired. These are due to circulatory changes, circumscribed œdemas in the cortex, or more pronounced changes in the ganglion cells. Such conditions often follow so-called paralytic attacks, which consist essentially of spasmodic motor disturbances with impairment of consciousness. For weeks the patient may be unable to find the name of some object which he recognizes. Or there may be entire loss of speech, with partial comprehension of surrounding circumstances. The variability in these symptoms and their combination with the peculiar changes of speech which we have already considered are characteristic of paralytic dementia. Aphasia is permanent only in focal destructions of the cortex—and this does not happen in typical paresis—or when complete dementia abolishes speech. Increasing dementia is thus the last cause of speech disturbance. When dementia has set in the

patient fails to understand language. It is characteristic of the primordial importance of speech as the expression of all psychical processes that even in the majority of cases of focal aphasia intelligence gradually suffers, particularly because diffuse changes occur around the focal lesion and the connections with other parts of the brain are thus implicated. Inasmuch as paralytic dementia is a diffuse affection of the cortex, it is evident that its coordinatory and aphasic speech disturbances must be intimately associated with increasing dementia.

A few words may be devoted to the disorders of the contents of speech. The patients indulge in circumlocutory expressions, use fanciful self-made words and terms of expression, and return to the grammatical construction of the days of childhood. Sometimes the patient talks as if he were embarrassed, but as this develops during the course of the disease, it may be assumed to be the result of organic causes. Sudden interruption of a sentence, however, may simply mean that the demented patient is incapable of completing the line of thought.

We now turn to the disorders of other motor-cerebral nerves which are not concerned in speech. Pupillary symptoms are very important, but only when they have developed during the disease, and other causes may be excluded. For this reason differences in the size of the pupils often do not possess very great significance; moreover, this symptom is also observed in other psychoses. More importance attaches to frequent changes in the size of both pupils, especially during excitement, and to the transfer of dilatation from one side to the other. In the latter event the disorder is undoubtedly bilateral. Unilateral dilatation indicates disturbed innervation on this side only when the mydriasis is very marked. Otherwise it may be due to contraction of the other pupil. In such a case the disturbance is probably present in that eye whose iris is less freely movable. There may also be irregularities in the shape of the pupil. A much more frequent and important sign is striking and permanent contraction of

both pupils. This symptom is so significant that when any mental disturbance has been demonstrated it almost forces us to the conclusion that it will develop into dementia paralytica. Only the highest grades of myosis are significant, and the pupils are usually only as large as the head of a pin. Vision remains unchanged. It is worthy of notice that this marked myosis is also observed when disease of the spinal cord is absent. Shading or illumination of one or both eyes is often unable to produce a change in the size of one or both pupils, while they react to accommodation. Hence, there is reflex rigidity of the pupils with retained accommodation mobility. This phenomenon is also tolerably frequent in dilated or moderately dilated pupils.

Very pronounced and permanent mydriasis usually appears only toward the end of the disease.

Slight paralyses of individual ocular nerves, especially the abducens or a branch of the motor-oculi, often precede the disease for years. The resulting diplopia disappears, as a rule, after it has lasted for several months. Temporary nystagmus and spasm, more frequently ptosis of one or both lids, are also observed occasionally. According to recent investigations the latter symptom has a cortical origin in the lower part of the parietal lobe.

The cortex also contains a centre for movements of mastication, and it is therefore very probable, in the absence of changes in the medulla oblongata, that the symptom of constant violent gritting of the teeth (very frequently at the close of the disease) is due to disease of the motor-cortical region. As this symptom is observed in very few other psychoses, it becomes an important diagnostic sign.

Great importance attaches to disturbances of the nerves regulating the movements of deglutition, because they give rise to the risk of "swallowing the wrong way." In this way the danger of suffocation often arises toward the close of the disease. The difficulty of deglutition is owing rather to awkwardness than to true paralysis of the mus-

cles. Such patients should be fed very slowly, because they generally have a tendency to swallow food ravenously.

The movements of the arms and hands become awkward at an early period, and the patients soon become unable to thread a needle, button the clothes, etc. This awkwardness (often associated with rapid exhaustion) is sometimes greater on one side of the body. A certain degree of stiffness of the muscles soon adds a new obstacle to the execution of intended movements; tremor at such times must also be regarded as a disturbance of innervation. The incorrect gauging of the resistance and the degree of muscular effort to be employed is the cause of irregular jerky movements.

This is shown most distinctly in writing. Like speech, the writing also discloses the mental condition of the patient. The letters themselves are uncertain, the strokes extend beyond the normal limits and run in curved lines. Blots are numerous, the paper is soiled, the ink is partially rubbed out in places, the lines are written in different directions, sentences are interrupted, punctuation is senseless or entirely wanting. So long as writing is at all possible the tremulous, uncertain character is distinct. After the ability to write is entirely lost, the patient is greatly embarrassed when requested to write, and usually makes some excuse, such as "he cannot write without glasses or does not feel inclined to write." In some cases, however, writing is unaffected. If the disorder in writing precedes speech disturbances—and this is quite often the case—it forms a very important sign in the recognition of the disease.

Apart from the complication with tabes the gait may be affected to a notable degree. At first the walk may be tolerably rapid, but there is a certain weakness of the individual movements, the steps are short, and the feet are not lifted sufficiently, so that the patient stumbles over inequalities in the ground or on walking upstairs. The ataxic gait need not be described here. When lying

in bed the legs can be moved freely for quite a long time, but gradually the movements become tremulous and jerky, slower and more rigid, until finally a certain rigidity and tension of the muscles are the only evidence of the attempt at motion. It is very often found that every attempt to place the arms or legs in a new position meets with increasing resistance. We must then ascertain whether this resistance results psychically from notions of dread and fear or is a result of direct irritation of the brain. In the latter event the tension probably persists during sleep. But the fear which is occasionally manifested is less a psychical cause of the increasing rigidity of movement than an involuntary expression of the dread that a movement is required which will be attended with pain on account of this tension of the muscles. In some cases, however, the fear which depends upon the increased cerebral pressure may predominate over the rigidity which also originates in the cerebral cortex. The patients then resist every approach, do not allow themselves to be dressed or undressed, press the jaws together with unyielding force when food is offered; they often retain fecal discharges for several days. Such rigidity, which may subside temporarily, must be distinguished from spasms due to disease of the lateral columns of the cord. In fact, variations in the degree of disturbance of the gait are, to a certain extent, characteristic.

The lack of uniform innervation is also evident in the position of the trunk; the body is held obliquely toward one side, backward or forward. The position changes frequently, but becomes somewhat more constant when it is associated with the so-called paralytic attacks.

These paralytic attacks are very frequent, and may be apoplectiform or epilectiform. They are found among the prodromata of the disease; the "fainting spells" reported by the family are probably of this character. At a later period they become more distinct as apoplectic attacks, the patients fall to the ground, and the ensuing unconsciousness lasts longer. They rarely prove fatal

directly, but their sequelæ often terminate in death. They differ from true cerebral hemorrhage in that permanent severe paralysis is wanting, but there is a constant impairment of motion in certain groups of muscles on one side of the body. The rapid course of such attacks and the absence of post-mortem findings force us to conclude that they are the result of sudden, circumscribed circulatory changes in the brain, perhaps followed by œdema.

The epileptiform paralytic attacks must be regarded as the results of direct irritation of the cortex. The attacks are generally preceded by greater irrationality and increased difficulty of movement, occasionally by increased psychical irritability and a feeling of vertigo. The patient suddenly falls to the floor and convulsions set in, either general or unilateral. In a few cases the convulsion attacks the head, limbs, and trunk in a certain order. The unilateral convulsions often extend, in a little while, to the rest of the body, thus resembling true epileptic seizures.

The spasms are sometimes confined to one side of the face, or this is associated with constant movements of the tongue. After the attack, twitchings of certain muscles of the face or arms sometimes continue for hours. After complete cessation the patients are very confused for a long time. A considerable increase of mental weakness is noticed almost constantly, and the dementia often develops suddenly after the attacks. They may also be followed by disturbances of speech and hemiplegia, but these generally recover in great part. The attacks recur at irregular intervals of days, weeks, and months, and very rarely are they entirely absent. They sometimes occur in series; hundreds of attacks have been observed within a few days, and then death generally follows. This termination has also been observed within a few hours after a few attacks. They may also be followed by maniacal excitement or the latter may take their place as a psychical equivalent. During the attacks the temperature generally rises, and sometimes exceeds 41° C.

Disorders of the bladder and rectum, independent of disease of the spinal cord, are due to insufficient attention on the part of the patient. Complete paralysis of the sphincters only occurs in general paralysis attending spinal diseases.

Numerous psychomotor disorders occur as irritative phenomena during the course of the disease. For example, slight catalepsy and peculiar postures of the limbs. We also find useless imperative movements, which occur, however, in the shape of co-ordinated movements, such as clapping the hands, picking, rubbing. These may also be due in part to local irritation of the skin.

Finally, the motor disorders of dementia paralytica are often associated with systemic diseases of the cord, especially tabes and spastic spinal paralysis. The not infrequent combination of tabes and paralytic dementia compels us to assume an intimate relation between them. These cases are distinguished from simple dementia paralytica by the distinct sensory symptoms, the ataxic gait, Romberg's symptom, and optic-nerve atrophy. It is not improbable that these phenomena are associated with the extension of the disease to the occipital cortex. Descending disease of the lateral columns occurs almost constantly in slowly progressing dementia paralytica. In such cases the spastic symptoms are much more permanent and pronounced than in other cases.

The reflex excitability, which is occasionally increased at the beginning, diminishes quite constantly toward the close of the disease. If the reflexes are increased in complete dementia, it may be explained by the abolition of the inhibitory influence of the brain. But diminution of the superficial and deep reflexes is almost always associated with disease of the spinal cord, especially tabes.

Rare, and probably accidental, disorders are peripheral paralyses due to a neuritis. The observation of cases of paralytic dementia which followed peripheral paralyses has led to the suspicion that the former may develop from

the latter, but this mode of development has not been demonstrated.

Neuralgias are frequent not alone among the prodromata, but also during the disease. They are perhaps dependent on meningitic processes or upon circulatory disturbances in the brain itself.

This is true of anæsthesias only to a certain extent. Certain anæsthesias are undoubtedly due to cortical lesions, but these are confined to small portions of the body. This occurs when the parietal cortex is involved, and the muscular sense seems to be especially affected. But as anæsthesia commonly develops only in the later period of the disease, the dementia is commonly too far advanced to permit us to obtain accurate data concerning its situation. Disorders of feeling are very important, however, because they may be the cause of numerous severe injuries and mutilations, such as burns from cigars, a stove, bites in the tongue, etc. Delusions which are due to the disorder of sensation increase the danger. Mere insensibility of a limb may induce the patient to regard it as something foreign, and therefore to inflict injury upon it.

Occasional losses in the domain of the special senses also depend upon the extension of the disease to the posterior brain. This has been observed more accurately in regard to the sense of sight. Such symptoms must be distinguished, for example, from those which result from atrophy of the optic nerve in tabes, or from diseases of the eye, especially inflammations of the retina. We refer to disorders of vision which point to the cortex as their source on account of their unilateral character. The color sense may be impaired, likewise the distinction between light and dark. The various forms of contraction of the field of vision which are due to focal lesions may occur temporarily in dementia paralytica.

It is also very probable that the subjective light phenomena and visual hallucinations which are observed occasionally in paralytics are the result of irritative con-

ditions in the occipital cortex. Hallucinations of all kinds may also occur in dementia, but they are rarer than in other psychoses and have less influence, on account of the dementia, upon the patient's conduct.

Vasomotor disorders are of great importance in this disease. The variable character of many of the mental and bodily symptoms appeared to show that the vasomotor system is the first to be implicated, and this is also evident in the subsequent course of the disease. The pulse is feeble and shows that the walls of the vessels are distended very gradually. Progressive paralysis of the entire vasomotor system leads to temporary complete paralyses in certain parts. These include vertigo, apoplectiform attacks, unilateral sweating, rush of blood to the head and face, local redness of the skin—all of which rapidly appear and disappear. This alternates with spasm of the vesssels, shown by pallor of the skin and a feeling of coolness. Toward the end of the disease permanent vasomotor paralysis is evinced almost constantly by the œdemas and cyanosis, especially of the hands and feet. Punctate hemorrhages into the skin, also hemorrhages from the internal organs, particularly the bowels, are observed. These symptoms are attributed to implications of the sympathetic nervous system and probably are due, in part, to a direct affection of the cerebral cortex.

Closely related to the vasomotor changes are the trophic disturbances, but we must be careful to exclude lesions which result from external injury. The most important trophic changes are the othæmatoma, fractures of the bones, and gangrene from pressure. These cannot be attributed solely to external mechanical influences, such as a blow or pressure, because the often trivial injury could not produce such severe effects were it not for the vasomotor-trophic basis.

Respiration is usually unchanged. It is probable that the frequent pneumonias are not due to vasomotor paralysis, but that they are "foreign-body" pneumonias.

Dementia paralytica usually runs an apyrexial course,

and the bodily temperature may not be raised even during inflammatory complications. On the other hand, distention of the bladder and rectum may occasion brief pronounced rise of temperature. When the disease is far advanced the temperature often falls below 37°.

We will now turn to the consideration of the rarer depressive form of general paresis. It begins with the same prodromata as the already-described expansive form, so that it is only recognized by the constant predominance of melancholic feelings and ideas. Fear and delusions, which are perhaps always associated with conditions within the body, always possesss a monstrous and unmeasured character. Loud outcries, with all the signs of inner restlessness, and sudden suicide are not uncommon, even when the dementia is comparatively far advanced. If the affect has subsided and the mental faculties can still develop ideas with a certain connectedness, we find simple melancholic self-accusations, mingled with depressed feelings concerning the patient's own body. Such a condition of consciousness may long be concealed beneath a rigid bearing before complaints are uttered. Sometimes these are uttered very early and can be distinguished from simple melancholia by their peculiar monstrous character, apart from the other symptoms of paralytic dementia. It is equally common, however, to find ideas which might belong to the history of simple melancholia. In other cases the patient is tormented by the idea that he has contracted debts of hundreds of thousands or millions of dollars, that he has been converted into a glass house, or that his head or brain is shrivelling and drying. Surrounding persons and objects may also appear to shrivel until the very existence of life is denied. Sometimes the mood of negation is shown in acts rather than in speech. The patients offer resistance to everything that is done for them, spit out the food that is placed in their mouths, tear their clothes.

We have already seen that the depressed mood sometimes forces its way into the expansive mood. If this

occurs with a certain regularity, the term circular form of dementia paralytica is applied, but such a condition is rarely observed in a pronounced form.

If delusions and material changes of mood are wanting, then dementia, in addition to the other signs of paresis, predominates in the course of the disease. Impairment of memory and of psychical functions of all kinds develop gradually until the dementia reaches the same degree as in the other forms, accompanied by all the bodily disorders of the disease. Hence all the different varieties resemble one another completely at the close of the disease. The latter, so-called demented form, is found with comparative frequency in women. These patients are not transferred so frequently to asylums, because the mental signs of the disease are milder and lead more rarely to conflicts with law and order. In many of these cases the condition is mistaken for a long time for neurasthenia. It develops at a comparatively early age, sometimes even before the thirtieth year.

The course of paralytic dementia in general is subject to many changes, and all the symptoms of the disease may disappear so completely that we are tempted to believe in true recovery. After a time, sometimes even after the lapse of one or two years or more, more severe symptoms reappear, and thus confirm the progressive character of the ailment. But as a rule there is a steady increase of the dementia as well as of the motor symptoms. The duration is extremely variable, but averages about three years. In elderly people and in women the duration is longer. If dementia predominates, without delusions or affects, the course is also much prolonged and, according to some, may extend over twenty years. Exceptional cases run their course, with violent symptoms, in a few months or even weeks. These galloping cases are of tenunrecognized and are, perhaps, sometimes included under so-called acute delirium, to which we have already referred.

It remains for us to consider the termination which is common to all forms of the disease unless its course has

been interrupted by severe paralytic seizures or diseases of various organs. If this does not happen, the dementia constantly increases and a mere vegetating body remains. Finally, walking becomes impossible and the hands become incapable of independent movement. The helpless patient then lies in bed, passes urine and fæces involuntarily. Slow compression-gangrene often accelerates the termination, or this is brought about by some complication, such as pneumonia, suffocation by food, nephritis, etc. If the patient escapes these dangers he emaciates and gradually succumbs.

At the beginning of quiet dementia and after the affects have subsided, many patients acquire a temporary obesity which persists so much longer, the slower the course of the disease. Toward the end of the disease we sometimes find brief periods of excitement, and certain irritative symptoms, such as grinding of the teeth, may become prominent. In fact, the latter symptom may persist until death.

Paralytic dementia terminates, therefore, in death, inasmuch as complete recovery and the very slow forms are so extremely rare that they need hardly be considered in prognosis. Unless the fatal termination results from suicide, suffocation, injuries, paralytic attacks, compression-gangrene, or internal diseases, the patients die from general exhaustion. But with careful treatment at the onset, improvement or retardation of the course of the disease may be effected to such an extent that the patients may remain capable of mental work for a long time. Some observations appear to show that remissions are only lasting in the expansive form of the disease and when speech disturbances are very slight or almost absent, while the depressed or demented forms hardly ever present such improvement.

The development of the disease is favored by the noxious influences inherent in the agitated life of recent times, especially when associated with want, worry, and bodily excesses. Hence it occurs chiefly in men of mature years.

The disease may develop between the ages of twenty and sixty years, but it is by far most frequent between the thirty-fifth and forty-fifth years. Outside of this period the diagnosis may only be made when all other possibilities are excluded. Cases have been reported, however, as early as the age of twelve. In women the influence of the menopause somewhat extends the age limit. Females are attacked about one-sixth as often as males. Women of the higher classes rarely suffer. Military officers, merchants, firemen, railway and telegraph officials suffer in strikingly large numbers; lawyers and physicans are also attacked with comparative frequency. Heredity does not play so important a part as in other psychoses, and the disease is much more often acquired from mental overwork. It is probable that syphilis is an important predisposing cause, but when severe symptoms of syphilis are still present the signs of dementia paralytica are not typical, as we will see later. Alcoholic excesses alone give rise to different symptoms, but drink combined with sexual excesses very often result in typical paresis. Dementia paralytica after injuries to the head also exhibits some special symptoms.

The microscopic changes in the brain extend at the same time to the blood-vessels and the interstitial tissue, and later involve the entire brain substance. In the vascular sheaths are found red and white blood globules, the vessels are filled with blood and often bent. Thickening of the wall makes the vessel narrower, in places the nuclear proliferation in the sheaths produces a nodule, and sometimes miliary aneurisms are found. In other places connective-tissue prolongations sprout from the sheaths of the vessels. In some cases the disease of the vessels is also found in other organs.

The basement substance in a large part of the cortex contains an increased number of nuclei. In addition, we find numerous lymphoid wandering cells and connective-tissue cells, among which spider cells are especially prominent in the layers of the cortex and in the white matter.

Extensive adhesions of the meninges to the surface of the brain are found only in those places in which there is increase of the connective-tissue cells, and a condensation of the basement substance (so-called sclerotic atrophy). Such adhesions are found frequently but not constantly; they may be absent in slowly progressing cases in which great thickening of the meninges has occurred. It is probable, indeed, that the adhesion is only temporary, that it depends on swelling of the basement substance and may disappear with it. This does not occur until shrinking of the entire brain tissue has set in. Perhaps the absence of adhesions may also be due to mechanical conditions, inasmuch as variations in intracranial pressure will affect chiefly the cortex. This may explain the fact that the adhesions are never so pronounced in the sulci as upon the convexity of the convolutions. On the other hand, certain mechanical processes of softening after death explain, in part, the fact that detachment of the meninges generally removes the cortex in definite layers. Previous disease of the tissues, however, is the cause of the more rapid softening of certain layers in the dead body or the firmer adhesion of other layers. The chronic interstitial inflammation sometimes gives rise to sclerosis of the tissues; in these rare cases the brain substance is hard and firm on section.

The morbid processes in the nerve cells may be briefly summarized. The pyramidal cells of the middle layers are often affected most distinctly, and hence the cortex often tears here when the membranes are detached. The ganglion cells in general are at first swollen, contain large nuclei which almost fill the cell, and also a very distinct nucleolus. In time they shrivel, lose their sharp outlines, and the cell processes disappear. Fatty degeneration and pigmentation, calcification and the formation of vacuolæ in the cells need merely be mentioned here.

There is also a distinct atrophy of medullated nerve fibres, and quite often only in certain parts of the cortex and medullary tissue. This is found, in approximately

the same way, only in closely allied forms of dementia, such as senile and epileptic dementia, and in connection with the other findings it is characteristic of general paresis.

The changes visible to the naked eye appear in the following manner. Distinct opacity and thickening of the meninges extend from the top of the frontal lobe more or less uniformly over the parietal portions to the occipital lobe, where a sharply defined border is sometimes observed. These cases seem to be unattended with disturbances of vision. Even when the latter are present, the extension of the disease over the occipital lobes is not always so distinct that we may assume an unquestioned relation between them. The thickening of the meninges is a proof of disease of the underlying cortex. In dementia paralytica it is always connected with encephalitic processes, while simple leptomeningitis may develop independently. Corresponding to the distribution of the microscopic changes, the thickening and adhesions of the meninges are most pronounced at the base of the frontal lobes, the median aspect of the hemispheres and the region of the island of Reil, while the parietal lobes are less affected, especially toward the base. When the speech disturbances were very pronounced an unusual degree of adhesion of the pia to the speech convolutions on the left side has been noted. In a number of cases the adhesions at the base of the frontal lobes were associated with tabetic symptoms.

The atrophy of the convolutions affects mainly the frontal lobes, the superior parietal convolutions, and sometimes the adjacent part of the temporal lobe and insula, occasionally the occipital lobe. In these regions the convolutions are narrowed and sometimes exhibit sharp edges, the sulci gape; certain parts are sunken. A section of the convolutions shows that the gray cortex is very narrow. The entire weight of the brain, and especially of these parts, is greatly lessened. The diminution, on the average, is 100–200 gr., but sometimes the weight of the brain falls below 1,000 gr. (the average weight of the brain in adult

males is 1,350, in females 1,250). The changes mentioned are usually distributed uniformly over both hemispheres, but no slight differences in this regard are sometimes found.

The ventricles of the brain may be greatly dilated so that the atrophy of the brain tissue between them and the surface is very pronounced; atrophy of the basal ganglia is exceptional. Recently, however, atrophy of the optic thalamus has been observed in the posterior region, especially the pulvinar, and has been supposed to be related to suddenly developing disorders of tactile sensation, speech, and vision. More frequently the optic tract and its appendages are atrophied, more rarely the olfactory bulb and other cerebral nerves.

Distinct atrophy of the fibres has been found occasionally in the central tubular gray matter, and this is significant because it contains numerous fibres which connect it with the optic thalami. Certain observations seem to show that it is the path for the production of expressive movements, and that the association of the thalamus and central tubular gray matter may perhaps be the central point for mimic innervation. At all events, there appears to be no doubt that in dementia paralytica the more complicated disorders of movement may be considerably increased by the atrophy of fibres in the central tubular gray matter.

Greater clinical interest attaches to hæmatoma of the dura mater, although it is not very constant and is also found in other psychoses, injuries to the skull, other diseases of the brain, and occasionally in constitutional diseases, such as tuberculosis. The hæmatoma is a membrane on the inner surface of the dura mater, usually in the distribution of the middle meningeal artery (at the apex of the parietal lobes), but sometimes extending to all the cerebral fossæ. It is generally a loose yellowish deposit, infiltrated with hemorrhagic extravasations, and can be separated from the dura. Renewed hemorrhages may gradually result in a very extensive membrane, which

may produce special symptoms as the result of compression of the brain (especially series of epileptiform attacks).

Changes are sometimes found in the nuclei of the medulla oblongata, for example, colloid degeneration of the hypoglosssal and facial nuclei.

Apart from the disease of the posterior columns of the spinal cord peculiar to tabes, we very often find a chronic myelitis of the postero-lateral columns, especially when the dementia runs a slow course. More rarely there are scattered myelitic or sclerotic foci. In galloping dementia the spinal cord is unchanged.

The diagnosis of progressive paresis with delusions of grandeur is usually not very difficult when the disease has reached its height. It is more difficult during the prodromal period. Special consideration must be paid to the change of character, the loss of former higher interests, ethical ideas and æsthetic feelings, and the impairment of memory and judgment; then the mild vertiginous attacks and the numerous motor disturbances among which the more prominent are myosis and the speech disorders; attention may again be called to the increase of the latter on reading aloud as an aid in diagnosis. It is well to have the patient read rapidly, when all defects often become surprisingly distinct.

At this period neurasthenics present many of these symptoms. But profound change of character and ethical and intellectual weakness are absent in neurasthenia. The patient also observes the motor symptoms very carefully, while the paralytic usually does not notice them. Tremor of the tongue and associated movements of the facial muscles in speaking are seen very rarely in neurasthenia. The readiness with which such patients are exhausted is shown by the increase of the speech disorders after exertion, but after a night's rest they are least pronounced. In dementia paralytica the speech disorder is also distinct immediately after waking. The mental weakness in the latter is also shown by the insufficient

arrangement of speech concepts, so that there is much greater hesitation in speaking.

For a time the disease may sometimes be mistaken for mania, when delusions of grandeur and a condition of excitement are well developed. But mania develops with comparative rapidity, while the prodromes of paresis often date back for years. Attention should also be directed to the monstrous, unbounded character of the delusions of grandeur. Finally, the speech disorders and paralytic seizures possess decisive importance. There are, however, cases in which the symptoms of complete mania last for several months before motor disturbances begin.

If a depressed mood predominates and the delusions have negative contents, especially when they are associated with feelings of derogation concerning the patient's own body, the condition may be mistaken for melancholia. If evidences of mental weakness are found, and especially if the age is favorable to the development of dementia paralytica, the outbreak of this disease is to be feared.

At certain periods paranoia exhibits certain similarities to dementia paralytica, but they disappear on closer observation. The delusions of the former are firmly systematized, and it exhibits no motor disorders. There is also a great difference in the two diseases with regard to the mental ability and judgment of matters which are not related to the contents of the delusions. For example, the paranoiac almost always recognizes insanity in others: the paralytic dement hardly ever does so.

The forms of dementia which are associated with paralyses (and which will be discussed in the following section) are distinguished by the greater constancy of the accompanying hemiplegias or other paralyses. The development and course of the disease and the age of the patient also aid in diagnosis. Mistakes are often made, however, especially when diffuse and circumscribed changes in the brain are associated with one another.

Without a knowledge of the previous history it is often difficult to distinguish general paresis from epileptic in-

sanity, because the latter may also exhibit weakness of memory, speech disorders, occasionally even delusions of grandeur, and an epileptiform attack may occur in the same manner in both affections. In epileptics, however, all these symptoms usually diminish rapidly as the interval after the attack increases. The religious character of the delusions, the reckless violence of the acts of the epileptic, who is usually in a dreamy state, are further means of differentiation. Apart from the fits, an epileptic dement may resemble a paralytic dement very closely, but this form of dementia usually develops at an early age, and remains in statu quo for many years.

The treatment of the disease in its incipiency is of chief importance to the practitioner because the fully developed malady offers no prospect of recovery.

Inasmuch as mental strain of every kind is the chief etiological factor, the first requisite is the greatest possible rest. This necessitates the removal of the patient from his accustomed surroundings. He is thus separated from his occupation and family, and at the same time from a hundred slight influences which daily irritated him. The new surroundings should contain no new irritants; hence a prolonged stay in the country with a stranger is advisable. Travel for purposes of recreation should be avoided. Bodily and mental repose must be secured in all directions. If morbid sexual excitement is manifested in a married man, the removal of the possibility of excesssive intercourse will exert a good influence. If he seeks to gratify his desires with other women, this very fact may make it necessary to transfer him to an asylum. This may also be necessary at the start, on account of a tendency to suicide, refusal to take food, extravagance or offences against public morals. Otherwise the patient should not be removed to an asylum at too early a period, especially if violent affects are absent. When nursing and the care of the patient become difficult, he may be removed to a hospital. But when the disease exhibits notable remissions, which may even render the resumption of work possible,

it is surely in the interests of the patient to keep him out of an asylum as long as possible. If the conditions favor treatment outside of an asylum and away from home, at least six months to a year will be required to secure any prospects of permanent success.

We must warn against excessive cold-water cures and douches, and also against all exhausting methods of treatment, such as anti-syphilitic treatment with mercurial inunctions. In some cases this is followed by rapid loss of power and the development of violent excitement. In cerebral syphilis with paralytic symptoms inunction treatment offers greater chances of success. But if the paralysis has developed to such a degree that atrophy of the brain tissue may be assumed, we must protest vigorously against active treatment by inunctions. Hypodermic injections of mercury seem to be especially dangerous on account of the frequent formation of abscesses. Even when inunctions are employed at an early stage, they should only be continued for a short time; if improvement does not take place rapidly, the treatment should be discontinued.

Potassium iodide is a less dangerous remedy than mercury, but no unquestioned successes have been obtained through the action of this agent. Inunctions of tartar-emetic ointment upon the shaven scalp have been recommended, but the results are more than doubtful, and this measure should not be employed in private practice.

Insomnia requires early treatment. The remedy which succeeds most frequently is chloral hydrate, in combination with morphine. Chloral may not be given continuously because it increases the weakness of the vascular system, as shown by local cutaneous affections and rapidly spreading compression-gangrene. In many cases sulfonal is a good substitute, and if this is refused injections of hyoscine often give good results.

Anxious excitement, which may attain the highest grades, is best combated by hypodermics of morphine. Milder grades are relieved by prolonged baths. Violent

restlessness generally subsides after isolation, which need usually be of short duration.

In paralytic attacks of long duration the evacuation of the bladder and rectum must be carefully attended to. The increasing imbecility sometimes necessitates artificial feeding, preferably through the nose. The danger of "swallowing the wrong way" is best avoided by carefully feeding the patient.

Careful attention to cleanliness by frequent lukewarm baths seems to prevent bed-sores; the position of the body must also be changed regularly. The greatest difficulties in nursing arise when rigid tension of the muscles, with feelings of fear, has developed. Cleanliness and feeding then demand forcible interference.

D. OTHER FORMS OF DEMENTIA WITH PARALYSIS.

Cerebral Syphilis.

The relations of syphilis to dementia paralytica have already been considered. When it appeared to act as a casual factor, the period which elapsed between its existence and the onset of the dementia was usually so long that it appeared to act rather by producing general weakness of the organism than by specific disease. A different condition results when definite anatomical changes of a specific character are associated directly with clinical symptoms. We will first consider diffuse syphilitic affections.

Post-mortem examinations have shown that cerebral hemorrhages, as the result of syphilitic disease of the vessels, may occur as early as the fourth month after infection, and that a third of the cases of syphilitic disease of the nervous system occurs within the first year. In a majority of cases, however, nervous syphilis does not begin until years after infection. The localization in the brain may be determined by cerebral concussion or mental overwork. The disease is first manifested in the small arter-

ies, which become narrowed and are finally converted into impermeable bands. Gummous new formations on the vessels are also found.

The changes in the vessels produce partial or complete interference with circulation in the corresponding parts of the brain, with or without softening. This explains the fleeting character of circumscribed paralyses due to the narrowing of small arteries, and the obstinacy of such symptoms as hemiplegia and aphasia, which are due to occlusion of larger vessels. As the changes in the vessels are almost always associated with inflammation of the dura mater and adhesion of the meninges to the convexity of the brain, we thus find anatomical conditions which serve to explain the similarities as well as the differences between cerebral syphilis and typical dementia paralytica. The accompanying symptoms often lead to the diagnosis of cerebral syphilis. A characteristic sign is the extremely violent headache which is very obstinate and is especially severe at night. Another important symptom is circumscribed anæsthesia, particularly in the face, associated with paralysis of the third nerve. Other cerebral nerves may also be paralyzed, but the changeability of the symptoms is usually a striking feature so long as larger foci of disease are wanting. In addition there is a combination of symptoms in anatomically distinct tracts; for example, left hemiplegia and aphasia, paresis of the right leg and left arm, etc.—symptoms which cannot be referred to a single origin. These conditions develop and usually disappear gradually. Complete loss of consciousness is not common, but peculiar conditions, like intoxication, are observed, from which the patients can only be roused incompletely; at times they give surprisingly rational questions and then relapse quickly into deep sleep.

The mental disorders are also characterized by incompleteness of the symptoms when small vessels are affected. The location of the disease in the frontal lobes gives rise to symptoms which closely resemble those of paralytic dementia. Usually this is the pure demented form, with-

out increased or diminished affects; pronounced delusions are still less frequent, although delusions of grandeur are occasionally distinct. A striking discrepancy is shown when a patient who is apparently profoundly demented unexpectedly manifests the delusions of grandeur, as the result of some accidental external cause. Even in the prodromal period there is a confusing variety and changeability of the symptoms, but the mental weakness appears at a very early period. The memory and mental faculties in general fail rapidly, the higher feelings become blunted, and great irritability and capriciousness set in. The facial expression is stupid. Although progressive dementia predominates the scene, violent conditions of excitement occasionally occur and furnish a transition between the vague prodromata and the more distinct dementia; violent conditions of fear, with terrifying hallucinations, are also observed at times. The greatest resemblance to dementia paralytica often follows the onset of paralytic seizures and speech disturbances, but they may be distinguished by their changeable and temporary character.

The duration is also extremely variable; sudden improvement and relapse occur, or even unexpected death during a paralytic attack.

Syphilitic affections usually begin at an earlier age than typical paresis, so that the suspicion of underlying syphilis becomes less when a doubtful clinical history begins in later life. As a matter of course, the diagnosis of syphilis is greatly aided by the discovery of cicatrices, thickenings of the bones, buboes, etc. In doubtful cases we may adopt experimental treatment with potassium iodide and inunctions. If this proves beneficial, the treatment may be continued more boldly. But unless some distinct benefit is obtained soon after the first inunctions, we must be very careful in the protracted administration of anti-syphilitic remedies. The anti-syphilitic, as well as other treatment, depends upon general principles which cannot be discussed here.

Diffuse Cerebral Sclerosis, Gliosis, etc.

Certain other diffuse diseases of the brain run a clinical course which is attended by many of the symptoms of progressive dementia with paralysis. They can rarely be recognized during life, but may occasionally be suspected from certain signs. In diffuse cerebral sclerosis there is an extensive increase of connective tissue in one or both hemispheres, sometimes confined to circumscribed parts, but distinguishable from insular sclerosis by the fact that the transition into non-affected parts is gradual. The brain substance is firm and cut with difficulty. Atrophy of the brain appears to proceed very slowly. Inflammations of the meninges are also found often in combination with sclerosis.

As the encephalitis which gives rise to sclerosis is very often unilateral, the motor and sensory disorders likewise are chiefly unilateral. Rhythmical twitchings in certain parts of the paralyzed side and tremor are regarded as characteristic. This is an important fact because the accompanying mental disturbances have great similarity to simple progressive dementia; the resemblance is increased still more when speech troubles develop. The patients are usually men between the ages of thirty and fifty years; the disease terminates fatally in a few years.

Another diffuse affection of the brain, known as gliosis, is confined to the superficial layers of the cortex in which the glia undergoes pronounced proliferation. This process is associated with the formation of cavities and atrophy of the nervous elements. The disease begins generally in early childhood with convulsions and mental irritability; later it may assume the form of paralytic dementia, often associated with optic atrophy and symptoms of tabes.

The cortex may also be affected in other ways, for example, after diseases of the meninges, so that numerous clinical pictures may develop; among these progressive dementia is noticeable. It is impossible to give a general

description of all these forms, which vary according to the predominant affection of this or that part of the cortex.

Focal Diseases of the Brain.

When violent purulent inflammations of the brain which lead to the formation of abscesses give rise to psychical disorders, the latter generally occupy the background. The action of the causal agent usually is followed rapidly by a profound impairment of consciousness which prevents the prominence of individual signs of mental disturbance. As soon as the course of the disease has become chronic, certain more definite signs of mental derangement will attract attention, and if the previous history is imperfectly known the condition may be assumed to be purely psychiatric. This is also true of brain tumors and of the sequelæ of cerebral hemorrhage, embolism, and thrombosis. As a rule the psychical phenomena depend upon the extent to which the cortex is involved, but decided impairment of intelligence may also be produced when the lesion is situated below the cortex. In such cases it is very probable that disease of the vessels has given rise to the focal lesion as well as to the coincident mental disorder.

We cannot enter here into the description of the numerous symptoms of focal lesions of the brain, especially as they possess only minor importance as regards a knowledge of the accompanying psychosis. But the distinction between tumors and simple softening spots may here be indicated. In the former we usually find a depressed and tearful mood, the patients are retiring and finally become apathetic and imbecile. In addition there is changeableness of mood; the intelligence and memory are usually impaired. In the later course sombre, tearful affects become more frequent. Complete psychoses are rarer and almost always exhibit the signs of progressive dementia. Otherwise the symptoms vary according to the location of the tumor. Choked disc and optic neuritis are present

in almost all cases, and contractions of the field of vision are also common. The greater or less prominence of the psychical symptoms depends in a measure on the rapidity of growth of the neoplasm. In cerebral hemorrhages aphasia is a very frequent symptom, and in consequence thereof the patient often appears more demented than he really is. After the aphasia has lasted a considerable time, the general course of the mental processes also suffers deterioration. The patients usually have a very irritable, tearful, but changeable mood.

In multiple sclerosis, progressive dementia and speech disorders may simulate paralytic dementia, but the volitional tremor and nystagmus permit a correct diagnosis at an early period. The signs of spinal disease also appear more distinctly and earlier than in general paresis. Sclerosis does not begin after the age of forty years.

The symptoms of syphilitic lesions when due to the occlusion of large vessels also fall under this head.

In general, focal diseases of the brain rarely come under psychiatric treatment and belong rather to diseases of the brain proper. It must be kept in mind that psychical diseases are diffuse diseases of the cerebral cortex, and it is only by assuming an influence upon the cortex in general that we can explain the occurrence of mental disorders in focal lesions. As a rule, the irritative phenomena in such cases are temporary, and all the various focal diseases end in dementia.

The treatment depends on the symptoms and follows the general principles already laid down for the treatment of psychical disorders.

E. MENTAL DISEASE IN EPILEPSY.

We now turn to the consideration of those mental disorders which are associated with general diseases of the nervous system. The general neuroses, of which the most important to us are epilepsy, hysteria, and neurasthenia, must be considered from two standpoints, according as

they affect healthy nervous systems or develop in individuals whose nervous system is below par on account of hereditary taint. In the former event they may run their course without affecting the mental processes; in the latter some mental disturbance, however slight, will result.

The mental disorders which occur in epilepsy present great differences. While some individuals suffer from distinct epileptic attacks and in the intervals exhibit not the slightest mental abnormality, yet as a rule the neurosis impairs the mental life to a greater or less extent. Although milder conditions of irritability and mental weakness are not very striking, they are apt to pass into severe mental disorders. This is true of about a third of all epileptics. A slight change of character is usually noticeable at an early period; subsequently low impulses become prominent and are attended by general weakening of the intelligence. There is also an entire series of peculiar conditions which are very characteristic of the epileptic basis.

The most important feature of an epileptic attack is the disturbance or loss of consciousness, while convulsions may be entirely absent. In addition to fully developed attacks, there are mild vertiginous conditions in which there is merely a brief (a few seconds to half a minute) loss of consciousness, associated with interruption of any occupation which has been begun and unattended with spasms. The patient suddenly stops in the midst of any occupation, stares vacantly for a few moments, sighs deeply, and the attack is past. He then continues his interrupted occupation. These conditions are recognized most easily as true epilepsy when they alternate with convulsive seizures. There are also numerous transitions from these slight attacks to the more severe ones.

There are a number of psychical disorders which may take the place of an epileptic attack, such as so-called epileptic dreamy states, true psychical equivalents, and epileptoid conditions. In psychical epileptic attacks there is usually complete loss of memory of events during the attack, and the mental disorder often appears almost sud-

denly. Often, however, we find an aura, as in simple epilepsy, but the psychosis proper usually appears without a prelude. Gradually a peculiar condition of mind develops between the periodical attacks, and must be distinguished from the aura which immediately precedes the attack. Hence, we must first consider those mental disorders which develop before, during, or after an epileptic attack, and then those which develop during the intervals. Later we will consider the true epileptic psychoses, which extend beyond the period of an attack.

The epileptic aura may consist of various mental changes, lasting a few minutes or hours. For several hours before an attack some epileptics become depressed and irritable; others exhibit great slowness of comprehension, weakness of memory, and apathy toward higher ethical notions; still others exhibit an unusual cheerfulness, great reliance upon their own powers, and this increases perhaps into a condition of great restlessness and loquacity.

Intellectual disorders which precede the attack by a few minutes belong more directly to the attack itself; this becomes so much more distinct when the same notion or hallucination constantly returns just before every attack. Thus the patients see flames, often the colors red and purple; they hear bells ringing or a distinct voice; sometimes they notice an odor or stench. These phenomena are usually repeated in the same patient in exactly the same manner with every fresh attack.

On account of the impairment of consciousness, special mental disorders at this time are noticed very little. But it is worthy of note that some patients, after the termination of a spasmodic seizure, retain a certain summary memory of the notions which appeared during the attack in their clouded consciousness. They then describe the condition as a disagreeable dream, or there may be violent qualms of conscience or thoughts of indescribable misfortune, although they are unable to base these feelings on reality.

The mental disorders after the epileptic attack are more important. The patients are then more or less imbecile for a few minutes to a few hours. It is difficult for them to collect their thoughts, to account for the persons and things around them. Some remain in this condition for hours, and are very sad and depressed, while others are tormented by an indefinable fear.

Other mental disturbances may also appear immediately after an epileptic attack. After a few moments of rigidity there may rapidly develop a condition of great violence and blind rage, probably accompanied in many cases by frightful hallucinations, and manifested by the most reckless violence and tendency to destruction. The patients do not retain the slightest memory of this condition. More harmless are those cases in which the patients merely walk about restlessly for a little while, but there are gradual transitions between the temporary psychical disorders which follow the epileptic attack immediately and the long-continued psychical disorders in which the epileptic seizure appears to be of minor importance, and the mental disorder becomes an equivalent for it.

We must first devote a little attention to the ordinary mental condition of epileptics in the intervals between the different spasmodic seizures. As we have already stated, there are some epileptics in whom not the slightest trace of mental disorder can be detected in these intervals. In the majority of cases, however, peculiar changes can be more or less distinctly recognized. The predominant characteristic of the epileptic is his irritability. The patients are usually distrustful, easily angered, and become violent on very slight provocation or none at all. They are obstinate and constantly moody. The irritable mood becomes especially striking on account of the frequent alternation with a mood of entirely different character, in which the patient is timid and reticent, obeys all injunctions implicitly, or even exhibits complete submissiveness, sometimes tinged with tenderness and politeness. At times there is an abnormal, causeless mirth. These

symptoms may undergo numerous changes, which cannot be attributed to external causes. Sometimes they perform their duties diligently and carefully, but there are times in which this becomes impossible. A tendency to lie is very often observed, and this may be associated with envy and jealousy. Epileptics are often intriguers and indescribably ingenious in lying, but at the same time coarse and lacking in consideration when their faults are brought home to them. These symptoms are always periodical, so that we are surprised occasionally by evidences of good-humor and amiability.

We may also find, in the interparoxysmal periods, a pseudo-religious character, in which a great deal of time is devoted to reading the Bible. This characteristic is so much more disagreeable because it is almost always associated with a disappearance of ethical feelings in actions toward others.

We now turn to the consideration of epileptic insanity proper. Its characteristics are the periodical paroxysmal recurrence of very brief and violent symptoms, which are either forgotten entirely or merely remembered summarily.

Their relationship to the milder psychical changes of an epileptic vertiginous attack is shown most distinctly in the brief dream conditions, whose description remind us in many respects of the losses of consciousness already described. The condition lasts several hours or days, consists chiefly of great confusion, but often of great fear, and is often accompanied by impulsive acts. The prodromata are a morose manner or hopelessness, increased by a vague consciousness of what is impending, if the patient has already had repeated attacks. He begins to wander about and is the victim of an indefinable fear; attempts at explanation sometimes crop out, and the patient regards himself as the victim of a conspiracy. Impulsively he resists and seeks revenge; suicide and homicide may then occur, and, particularly in young people, incendiarism. The special characteristics of these acts are their violence and suddenness. In this condition the

patients attack one person after another, and, not satisfied with killing the supposed enemy, again inflict numerous wounds upon him or destroy objects in a blind rage.

These attacks are often, although not always, accompanied by hallucinations. They possess a frightful character and thus intensify the affect. Shining objects, fire, bloody phantoms, terrible dangers, ghosts, more rarely distinct individuals, such as a black man or the devil, throng upon them. Sometimes they surround the patient on all sides. Auditory hallucinations are rarer, olfactory hallucinations (stench) somewhat more common.

After an act of violence has been done, the external excitement may rapidly subside, but the dreamy condition generally continues for some time, even after the fear has disappeared. The memory of what has occurred may be tolerably clear during the attack, but then disappears rapidly, either completely or only partially, so that the patient is able to remember certain events. This fact should lead us to exercise great caution in judicial cases, because the suspicion of intentional deceit naturally arises if a confession which was made soon after the act is afterward disputed by the individual. As a general thing, however, there is complete loss of memory during the entire duration of the attack.

A different history is presented by the "dream conditions" without fear. Here the contents of consciousness are usually of a religious nature. The patient sees the heavens open, and is himself an angel, God or Saviour. Or he plays the part of a contrite, finally pardoned sinner. Calling the name of God is almost a special characteristic; commands received from God impel to sudden acts. Another notable feature is the frequency with which acts of sexual violence are committed during this condition. The condition generally develops very rapidly, but the disorder of consciousness is lost very gradually. The uniformity of the individual attacks is very characteristic. This is also true of another series of epileptic "dream conditions," in which the contents of consciousness revolve

around romantic events, which are usually invented, but are taken seriously. In other cases the patient passes through the strangest adventures during his "dream condition." He makes long journeys and finally turns up in a foreign land without knowing how he reached there. Such a state is closely allied to somnambulism, and in some cases the latter undoubtedly belongs to the group of epileptic "dream states." This can only be inferred, however, when the patient exhibits other signs, such as nocturnal epileptic attacks with enuresis, biting of the tongue, etc.

The epileptic mental disorders hitherto described either accompanied epileptic spasmodic seizures or took their place, and were of brief duration (a few hours or days). Some cases, however, furnish a transition to chronic forms of mental disease. Although the convulsions here play a minor part in the clinical history and may even be entirely absent, the course of the disease has the symptoms characteristic of epileptic insanity, so that the attacks are called præ-epileptic and post-epiletic, or are regarded as psychical equivalents. In addition to their greater duration (weeks and months), these conditions exhibit less impairment of consciousness, so that it is preferably termed dulness. As these conditions do not differ essentially from the brief mental disorders on an epileptic basis which have already been described, we will merely call attention to a few points that distinguish them from other simple psychoses. Although consciousness is not abolished, its disturbance is more profound than in ordinary psychoses; its onset is more rapid, almost sudden, and it subsides usually after a "dream state." The loss of memory of the attack and of everything connected with it is often complete. The senseless recklessness of the patient's acts and the religious tinge of the contents of consciousness are further distinguishing marks. The periodical recurrence of similar attacks is significant, and if they alternate with convulsive seizures every doubt is removed. Nocturnal convulsions may be recognized by their sequelæ, such as

headache and exhaustion, enuresis, bites in the tongue, extravasations of blood into the conjunctiva and face, and finally the peculiar change in the character of epileptics during the interparoxysmal periods. Difficult, stuttering speech may also persist, as a sequel, for some time. It is also well to know that the psychical epileptic equivalents are usually separated more widely in point of time than ordinary spasmodic seizures.

Finally, one form of mental disorder develops after a series of simple epileptic attacks or after the frequent repetition of single attacks. This is usually known as epileptic degeneration. It is manifested chiefly by the loss of intelligence, which increases progressively. As in all psychoses which progress to dementia, the loss of the higher mental feelings appears earliest and most distinctly. Hence, we here find cruel acts of violence which are unopposed by any ideas of morality, so that there is no question of subsequent remorse. The intellectual decay continues, and is always most pronounced immediately after the attacks, so that perceptions then result only after stronger stimuli. For a long time there is great irritability, so that the patient becomes violently angry on slight provocation. In comparatively few cases, however, do we find the highest grades of apathetic dementia in which the patients are helpless and filthy. It must be regarded as a peculiarity of demented epileptics that they long (sometimes always) retain the sense for externals, such as cleanliness of clothing. The earlier the primary epilepsy began the more pronounced does the dementia become. Bodily decay and paralyses then set in, together with disorders of speech.

The term status epilepticus is applied to a condition which develops when the patients, as the result of the rapidly succeeding attacks, no longer return to consciousness and lie as if in coma. Death may occur in this condition. There is usually a rise of temperature to 41° or 42° C., which is not due to the increased muscular action during the convulsions. The exhaustion is extreme and

is rapidly increased by the fact that the patients cannot be nourished. The number of attacks may amount to hundreds, and may last from a couple of weeks to a month, with brief interruptions.

Concerning the anatomical basis of epilepsy and its associated mental disorders we really know nothing positive. The most frequent cause is heredity, then follow alcoholic excesses, drunkenness of the parents, and conception while drunk. Next come the cerebral diseases of early childhood. Another important cause is concussion of the brain after injuries to the skull and the allied form of psychical trauma, viz., fright.

The following data may be considered in regard to prognosis. Intelligence is more apt to suffer in those forms of epilepsy which are characterized by frequent brief loss of consciousness and vertiginous attacks than after severe convulsive seizures. This fact appears to show that the mental disorder is not merely a sequel of the attacks, but that both are different manifestations of the same primary process. The chances that the mental powers will remain intact are also so much greater, the rarer the attacks, whatever their character. As a rule, the single attacks recover, but in general the mental disorders of epilepsy must be regarded as a very unfavorable form of disease.

The diagnosis is easy in pronounced cases, but it is sometimes very difficult and can only be made after prolonged observation which discloses the periodical course. Many cases of epileptic insanity have probably been described as transitory mania, and this mistake is avoided with difficulty. Such cases usually last only a few hours to one day, and run their course as a violent attack of rage with impulsive acts of violence. As a rule, they begin suddenly, without real prodromata, and rapidly attain their maximum; they are accompanied by vivid hallucinations. After the excitement the patient falls into a deep sleep, from which he awakes with a dull head and a feeling of great exhaustion and without a clear memory of the things that have happened. Here the signs of an epi-

leptic basis are the sudden beginning, the profound disturbance of consciousness with subsequent loss of memory, the impulsive violence of the acts, and the tolerably sudden cessation of the symptoms.

It is important to remember that psychoses other than those described may also be associated with epilepsy. If the association is accidental, such psychoses cannot be called epileptic. In some cases secondary dements become epileptic at a later period, so that it may be assumed that the cortical disease has extended to motor regions. The status epilepticus may be mistaken for eclampsia and uræmia, but the previous history and the examination of the urine will prevent mistakes. Certain difficulties may also be produced by a condition of rigid mutism, which has much resemblance to profound melancholia. It is only after this has run its course that we find a distinguishing feature in the defect of memory. Conditions of stupor, alternating with verbigeration and mutism, which probably have an epileptic basis, have also been observed. But these clinical conditions are interpreted by others in a different way, for example, as katatonia, and their position in our nosological system cannot be decided here.

The treatment of the mental disorders of epilepsy is the same as that of epilepsy itself. Potassium bromide enjoys great repute not alone in preventing convulsions and excitement, but also in maintaining the mental powers. The effective dose varies greatly in different cases. We generally begin with 2.0–6.0 daily and then increase, as required, to 8.0–10.0; the remedy is continued for a few weeks, and the dose is then diminished or discontinued. But if good results are obtained, a dose of 4.0 daily may be continued unchanged for years. In asylums we are apt to be mistaken in this regard, because the change to new and well-regulated surroundings and the improved nutrition may have been more efficient than the drug. Hence it is preferable to delay the administration of the drug unless it is indicated at once by imperative symp-

toms. After an attack it is also well to let the patient sleep as long as he will or to secure sleep by drugs.

When potassium bromide is useless, atropine or curare may be employed, although good results are rare. Injections of morphine may relieve the severe symptoms in the status epilepticus; chloral enemata are also recommended. It must be kept in mind that patients suffering from epileptic insanity are dangerous to others, so that they cannot be removed too quickly to an asylum. Even if the progressive dementia is only slight, sudden acts of violence may make the patient dangerous to himself and others.

F. INSANITY AND HYSTERIA.

The answer to the question whether hysteria is always a mental disorder depends upon our conception of mental disorder in general. There is no doubt that even the mildest forms of hysteria are often attended with a peculiar change of character, which we find again in all forms and degrees, but true hysterical insanity is a different affection and runs its course under definite peculiar symptoms.

As a rule, hysteria is a congenital and inherited constitutional neurosis, so that the mental functions exhibit many evidences of being below par. Hysteria in the male is so rare that we will refer only to the affection in the female sex. The disease often begins in childhood, but most frequently at the period of puberty. Although sexual life has great influence on the disease, still, not more than half the patients exhibit any irritative conditions of the genitalia, and it is even doubtful whether these are cause or effect. Furthermore, even the slightest indications of sexual excitement are often absent in chronic uterine disease of hysterical patients.

The mental symptoms may be divided into three groups: those which show a special change of character; those which accompany or are substituted for an hysterical seizure; finally, those which belong to hysterical insanity proper.

From early childhood the majority of future hysterical patients exhibit an unstable mental equilibrium. They are very impressionable, laugh or cry on the slightest provocation. They are quick, have talent for study, and a natural tendency to imitate, a certain talent for acting. At the same time they are deceitful, fond of command, excitable, sometimes very depressed. They get excited over trifles and remain unaffected by events which should touch them more deeply. They often suffer from numerous nervous affections, such as headache, abdominal pains, palpitation, nightmare, feeling of pressure in the throat, occasionally distinct spasmodic seizures. To these real complaints they often add imaginary ones in order to make themselves interesting. Religious tendencies at a very early age with conditions of ecstasy are signs of an hysterical basis.

In adult hysterical patients these predispositions develop with varying intensity. A changeableness of character is first observed. Without any internal reason they pass from cheerfulness and amiable traits to moroseness, sensitiveness, and violence, and become unjust and malicious. They exaggerate everything, are capricious in their feelings, in the noblest emotions as well as the lowest impulses. They are found at the head of charitable associations, and redouble their energies in solacing the down-trodden and in uplifting those who have lost hope. On the other hand, they are capable of the greatest moral transgressions, and finally are not abashed by crime. They are spirits of opposition and contradiction. To-day they maintain the opposite of what they asserted yesterday.

But despite this capriciousness they exhibit remarkable persistence under certain circumstances—complete mutism on account of the fear that speaking is injurious; fasting for weeks in order to avoid gastric disease; lying in bed for years in the firm conviction that walking is impossible. But such obstinate persistence is due not to strength but to weakness of will.

The capriciousness of character is, however, the most

marked feature. An hysterical patient who has been married only a few weeks complains that she is misunderstood, that she has not found the one whom she could make happy with the exuberance of her love. She makes things as unpleasant for her husband as possible, and later manifests this antipathy even to her children. Lying is a constant feature, and, in a measure, is the sign manual of the hysterical character. The slyness and persistence with which useless lies are told are sometimes astonishing. Sometimes they consist of false accusations and slanders. Hysterical patients have wounded themselves with knives and torn their own clothes in order to prove an accusation of rape. Or they slander others through the medium of letters which they write to themselves. The chief cause of such acts is the desire to appear interesting.

Even the tendency to sexual excesses which is often manifested is due to the desire to make themselves prominent. In some cases, however, there is really increased sexual excitement. The patients may then retain the urine in order to secure daily catheterization, or feign disease of the uterus in order to have a speculum introduced.

Every hysterical patient may pass from the mildest to the most severe of these mental disorders and finally pass into a pronounced psychosis. The main elements remain the increased excitability and diminished will power, which is increased only for certain perverse purposes. The patients follow the impulse of the moment and are incapable of controlling their antipathies against individuals and certain impressions, such as smells and sounds.

The intelligence and memory are not much affected. This very fact makes them able to carry out their designs, and they may thus become veritable nuisances to those around them and to the physician.

In order to understand the relations of hysteria to epilepsy we must first describe hysterical convulsions. An hysterical seizure includes numerous other physical symp-

toms besides the convulsions, but they will only be considered with regard to their psychical basis.

The sensory and motor disorders of hysteria have no anatomically conceivable basis, but are arranged in the sense of physiological activity and at the same time show the signs of psychical origin.

The prodromata of a spasmodic seizure are usually so distressing to the patients that they yearn for the relieving action of the spasms. Great restlessness and irritability distress them, and the attacks are also preceded by incessant yawning and sighing. The symptoms of an aura are, however, so manifold that they are incapable of coherent description. One feature is common to most of them, viz., the anxious hoping for the spasmodic attack, while the epileptic fears the seizure. When the convulsions begin the loss of consciousness is not as sudden as in epilepsy, so that the patients do not injure themselves in falling. At the onset all the movements are still arrayed in a regular physiological manner and stand under psychical guidance. In the severest cases complete loss of consciousness then follows. In the milder cases the patients can see and hear everything going on around them. The spasmodic movements are very extensive and irregular in their sequence.

The details of hysterical seizures cannot be entered into here. It is characteristic of many cases that they can be interrupted at any time by pressure on the ovarian region. This effect usually lasts only during the continuance of the pressure. The single attacks generally run their course in about a quarter of an hour, but they may be repeated and even amount to hundreds (status hystericus).

Contractures due to tonic spasms are subordinate to the psychical processes of attention and volition; while they are frequent in hysteria, they do not occur in epilepsy. The paralyses of hysteria associated with sensory disorders also show the extreme facility with which psychical stimuli change the symptoms of the disease. Catalepsy, with waxen flexibility, may also appear in hysteria under the

influence of the psychical excitability and coincident diminution of will power. The psychical influence is usually recognizable even in the disorders of the circulation and the secretory organs. Unlike epilepsy, the persistence of hysterical seizures for years produces no notable disorder of intelligence.

Although we are not in the habit of speaking of hysterical equivalents or post-hysterical conditions, it cannot be denied that similar conditions are found in certain "dream states" which follow or replace an hysterical attack. These states are longer or shorter attacks of impairment of consciousness. In the simplest form this disorder of consciousness extends beyond the spasmodic stage for a longer or shorter period. The patients lie with relaxed limbs, quiet respiration and slow pulse, the eyes rolled upward and to the side. In exceptional cases this condition may last days, even weeks.

The dream states, which belong to the domain of somnambulism, must be regarded as equivalents or protracted hysterical seizures. The patients are roused with comparative difficulty from this condition.

The dream states may acquire a different complexion from the addition of vivid hallucinations; they are combined with conditions of ecstasy in which rigidity of the muscles is also observed. Hallucinations of sight are especially important and are often of a terrifying nature. The patients see dark shadows, flames, animals, such as rats and snakes, also larger animals, which assume fantastic shapes. Naked men, corpses, funerals, murders, are also seen. The anxious restlessness may be increased still further by threatening voices and sounds and disagreeable odors.

Still more frequent are ecstatic conditions, with feelings of delight and heavenly phantasms, and this is shown in the patient's appearance. She is transferred to an imaginary world, and the contents of consciousness are often chiefly religious. In the posture of prayer or ecstasy, with the eyes turned toward heaven, the facial expression

shows complete abandonment to bliss. The rigid posture may then pass into that of crucifixion or it imitates other scenes in the life of Christ or the martyrs. Praying, the singing of psalms, and loud prophecies sometimes break the silence for a time. Later the patients state that they felt happy in paradise, in the presence of God and the angels, etc. During the period of ecstasy there is often insensibility to external stimuli, the pulse may be accelerated, the respirations slow, the pupils wide.

Sometimes the contents of consciousness refer to some actual previous experience; for example, an attempted rape. This event is then experienced again with numerous fanciful additions, and may lead to acts of desperate resistance and violent outcries. The scene often terminates in a convulsive seizure. Events of recent occurrence are also repeated occasionally in a loquacious manner, but in a very dreamy state of consciousness; the memory of this condition is then very imperfect.

Finally, we may mention a dream state which occurs in young girls, characterized by foolish excitement and usually preceding a convulsive seizure by a few hours. Singing, laughing, and dancing alternate with the tendency to collect various articles. The patients are usually in a cheerful humor, talk impertinently, do all sorts of foolish and mischievous acts, imitate animals. They do not recognize those around them, and have only an imperfect memory of the condition.

As a rule, all these conditions last from a few hours to a day, but the mild cases are sometimes protracted over several weeks or months. They begin and end quickly, their course is variable, and at times the impairment of consciousness may disappear almost entirely, while the other morbid symptoms remain the same, but are not recognized as such. These conditions often occur after childbed, severe hemorrhages, or conditions of exhaustion in general, and the prognosis is then comparatively good. The numerous hallucinations are sometimes interpreted as indicative of good or bad fortune, but on account of the

impairment of consciousness systematization of delusions is rare. At all events, the delusions rapidly disappear with the dream states.

Before proceeding to the discussion of hysterical insanity proper, it must be mentioned that simple forms of insanity may also occur in hysteria. When the simple insanity subsides, the hysterical symptoms may then persist. A theatrical demeanor and erotic tinge partially obliterate the clinical history of simple psychoses in an hysterical individual.

The basis of hysterical insanity is a degeneration, and can be regarded as a mental invalidism which imparts to the symptoms of the psychosis their direction. On an hereditary foundation its development is especially unfavorable, and it then often progresses steadily, although sometimes very slowly, to dementia. In the beginning the fundamental trait of hysterical insanity is the extreme sensitiveness of the patient, the feeling that she is unnoticed, and this psychical excitability is combined in various ways with the numerous symptoms of hysteria. When we hear constant complaints of neglect although the most sympathetic love is exerted in order to gratify the slightest wish, a suspicion of beginning weakness of judgment is justified, and this is confirmed by the steady advance to more or less severe degrees of dementia. The numerous disorders of sensation and other hallucinations interfere, from the start, with a quiet judgment by the patient concerning her own condition, and thus they are rapidly converted into delusions. At first the vividness of the ideas gives rise to a system which is intended to explain the depressed feelings, but this soon passes into confusion or dementia.

The condition does not progress steadily, but by fits and starts. It is often accompanied by shameless sexual impulses, together with olfactory hallucinations and religious ideas. Hysterical insanity is chronic and progressive, unlike the milder conditions of a similar nature in simple hysteria, in which the individual attack runs a brief

course without notable injury to the intelligence. It is distinguished from simple paranoia by the striking combination, at the onset, of psychical excitability and mortified self-love, and by the fact that the wild current of sensory disorders is interpreted without judgment; the course is usually more rapid, and the union of sexual, religious, and olfactory disturbances is peculiar to hysterical insanity.

Another form of hysterical insanity is unattended with hallucinations or they play a very subordinate part. Here the main feature is the patient's attempt to find in external influences an explanation for her own morbidly exalted or depressed mood. Great facility of speech, which often passes into a certain dialectic skill, is often associated with this condition, in which the patient is absorbed utterly in her own interests and is incapable of following foreign interests. In addition, there are numerous physical symptoms which can merely be referred to (motor and sensory paralyses, narrowing of the field of vision, disorders of secretion).

Even attempts at suicide may be made as the result of desperation. Usually, however, they are not meant seriously, although by accident they may terminate fatally. Hence, necessary precautions must not be omitted even in an asylum, although we ought to appear indifferent to the suicidal attempt. This form rarely terminates in dementia, while the higher feelings are lost in the growing selfishness. In these persons we not alone observe sexual excesses carried out in an impulsive manner, but also the theft of valuables from shops and friends.

The course of all the mental disorders which are associated with hysteria may be extremely variable. If the mental disturbance occurs in paroxysms, the chances of recovery of the individual attack are favorable, although relapses and new attacks are probable. But the hysterical change of character and protracted hysterical insanity may lead to permanent progressive conditions. The danger of terminal dementia is greatest in very young people, but

is much rarer than in epileptic insanity. On the whole, the prognosis of the mental disorders of hysteria is unfavorable, despite the probability of the subsidence of the individual attacks. When the sexual life plays an undeniable part, considerable improvement sometimes occurs at the menopause or after removal of local irritation. Otherwise the hysterical character, at least, remains until the end of life, or, in severe cases, more or less pronounced dementia gradually develops.

Treatment offers the best chances of success when we can succeed in removing the causes. Treatment of the individual symptoms is less successful because the patients must not be allowed to notice that we regard them as mentally diseased. If conditions of mental or bodily exhaustion are present, these must be relieved and renewed vigor restored to the exhausted nervous system. This usually requires, above all else, the removal of the patient from her accustomed environment and her transfer to surroundings in which she is compelled to recognize the mild authority of another. In many cases the personal influence of the physician may be even more important, as is evident from the well-known effects of suggestion in hysteria. This factor is more important, however, in simple hysteria with slight change of character than in cases in which the mental disorders are more marked. But suggestion may only be employed by the mild means of personal authority, not as hypnosis proper. The unshakable faith which the physician acquires through earnest sympathy thus becomes one of his most effective auxiliaries.

The bodily exhaustion is to be treated according to general principles. Thus, the rest cure, electricity, cautious cool douching after lukewarm baths, etc., may be valuable in combating prominent symptoms. Potassium bromide is not as effective as in epilepsy. It may possibly secure sleep by diminishing the nervous excitement, but its administration is contra-indicated in conditions which exhibit a tendency to hypnotic phenomena. Finally, we

must warn against the protracted use of morphine because the patients too often succumb to the morphine habit.

Proper psychical treatment under favorable external surroundings and good nursing are therefore the best remedies. This is especially evident in the occasionally almost epidemic occurrence of hysterical affections in which mental disturbances play a prominent part. In the similar conditions which develop occasionally in schools at the present time, recovery usually ensues very rapidly when the patients are separated from one another.

The spasmodic phenomena which occur in such epidemics are sometimes associated with others which resemble chorea. Indeed, mental disorders may occur in chorea and show that this neurosis is constitutional. But these disorders are too varied to permit the establishment of a special disease known as choreic insanity.

G. MENTAL DISORDERS WITH NEURASTHENIA.

Chronic Forms.

In this class extensive spasmodic symptoms are almost always absent, but great irritability and weakness of the entire nervous system occupy the attention of the patient so that he becomes a constant observer of all his manifold symptoms. The mental disorders associated with neurasthenia are very numerous, and include many conditions which are on the border line of insanity, and also the greater part of those morbid conditions which are known as hypochondria. The latter term has lost its original meaning and should now be applied only to designate individual symptoms.

Neurasthenia may be congenital or acquired. Many of its symptoms are found in other psychoses if they have developed on a neurasthenic basis. Here we will first consider those symptoms which possess a certain independence and at the same time a more intimate connection with the course of mental processes.

The main features of congenital and acquired neuras-

thenia are the extreme readiness of response and the rapid exhaustion of the nervous and mental functions.

The mental disorders associated with neurasthenia do not occur in paroxysms. Their development and course are slow and gradual and continue, with slight changes, for a long time. A constantly recurring feature is the feeling of prostration of the bodily and mental vigor. In moments of excitement neurasthenics are inclined to attribute their irritable mood to every possible external circumstance, but with the return of the general nervous exhaustion the insight into the connection between their mood and their own conduct also returns. The feeling of being sick does not follow reflection, but is imperative. The morbid element in the mental condition of these patients often consists of the very fact that this feeling of being sick is not sufficiently explained by other conditions of the body. Although we will meet numerous bodily symptoms which now and then lie at the foundation of the general condition and give it its general direction, this connection is not the rule.

The increased mental irritability is not alone too great, but is also too protracted, and a combination of increase and diminution of irritability over limited fields is undeniable. There is thus an absence of symmetry in the conduct of these individuals which cannot be concealed by the great self-control that is occasionally present. This may be true of the higher feelings as shown, for example, in excessive love and affection for others, or in the slight power of endurance in mental work, while even difficult mental processes are grasped at once with great ease. These conditions are sometimes subject to irregular changes.

In comparatively strong natures the increased excitability occupies the foreground, in weaker natures the rapid exhaustion becomes more prominent. When the excitability becomes blunted with increasing exhaustion mental decay usually sets in, while the excitability disappears with increasing endurance when neurasthenic conditions

recover. It is fortunate for such individuals when their mental development is slow, because recovery of the fundamental neurasthenic condition is then most apt to occur.

We have already said that one of the most important signs of the mental disorder associated with neurasthenia is the manner in which the feelings, thoughts, and actions of the patient absorb his entire attention, and we will now enter a little more closely into the details of this imperative thought. By this term we mean the various ways in which concepts, feelings, and impulses to action force themselves irresistibly upon the patient and overpower him. We may accordingly speak of imperative sensations, notions, and acts. In a measure the patient has lost control over the contents of his consciousness. A thought presents itself to him, to his surprise, without any connection with the ideas which may be present in consciousness at the time, or it follows immediately upon the sight of entirely irrelevant external objects. A constant feature is the recognition of the disorder and an often extremely distressing feeling of compulsion.

The imperative concept is rarely independent. If it remains simple and independent, it corresponds usually to a single idea. A single word constantly thrusts itself into the contents of consciousness, or the notion of some entirely foreign object, for example, a water-closet, or the name of a person in whom the patient has no special interest, continually intrudes in the most annoying manner. The distressing perception of this compulsion may naturally arouse fear and doubt in the ordinary psychological way, so that these cannot be called imperative notions; but even apart from such correct inferences, an imperative notion occasionally becomes associated with others along the path entered upon.

A frequent illustration of these associated imperative notions in neurasthenics is the notion that a letter has not been sealed, and this impels them to see whether the letter, lying on the desk, is still open. If the letter has already

been mailed, the fear is excited that others might read its contents, and then the restlessness impels to new thoughts. Perhaps this or that expression in the letter looks suspicious, a new letter is written in order to explain matters to the recipient and to beg his pardon, and then the distressing scene may begin over again despite the most careful supervision of the correspondence. Well known, likewise, is the notion that a door has not been closed, and this leads to continued reclosing, although the individual is fully conscious of the folly of his conduct and is even ashamed of it. These imperative notions may develop during the most varied occupations. The notion that a light has not been extinguished compels the patient to rise at night in order to see whether the light has really been extinguished, or if this is not done, the fear of fire is aroused in a distressing manner. Indeed, the performance of such little acts after these notions usually offers some relief, at least for the time. But if the patient, conscious of the morbid nature of his doubt, does violence to his feelings and, for example, fails to recount a sum of money which, for fear of miscounting, he has already counted a number of times, then the accompanying distressing affect increases and bodily feelings of an annoying character appear, such as tremor, palpitation, acceleration of the pulse, sweats, and diarrhœa. Quite a frequent phenomenon is the dread of touching door-knobs and other objects to which infectious matters might possibly have adhered. Or the notion that a bit of glass or a sharp splinter of bone may be concealed in the food leads to constantly renewed examinations, despite the knowledge of their uselessness. The patient cannot do otherwise—he cannot escape from the notion. One individual suddenly thinks that he may soil his clothes upon the street; this is followed by the notion that the dirt may come in contact with his body, excite the disgust of others, or fall into their food; he now avoids all contact with the floor, the walls, or with other people, walks only on tiptoe, constantly brushes his hands, etc.

Still more distressing are the conditions known as gruebelsucht (*vide* page 70).

We thus approach the domain of hypochondriacal complaints, which depend materially upon the culture and medical views of the patient. The dread that a serious ailment is developing finds sufficient grounds in bodily disorders which may really be present or solely in the nervous conditions which result from the neurasthenic basis. The complaints refer mainly to the fashionable diseases which are then attracting most attention. Cholera and influenza, syphilis and phthisis are found again and again in the reports of these neurasthenics; a chronic pharyngitis becomes incipient phthisis, slight eczema is converted into syphilis, etc. The demonstration of the absence of all cause for alarm does not relieve the patient, and the distressing feeling and imperative conception of this or that disease again makes it appearance. This imperative conception dominates the scene, while the numerous other symptoms which result from the primary taint usually become subsidiary.

The feelings called forth by the imperative concept do not possess the vividness and duration which we might be led to expect; the recognition that they are not appropriate constantly becomes evident to the patient himself. Hence the mood, although usually inclined to irritability and dissatisfaction, is very variable and capricious, and we are often surprised by redeeming traits, among which an active sympathy is the most attractive.

Among the accompanying bodily symptoms neuralgic pains are frequent. One of the most frequent complaints is that of headache of the most varied kinds, over the entire head, the forehead, or occiput. There is often a feeling of heat in the head, and not infrequently the patient feels rotary movements within the head. These feelings are associated with a certain degree of interference with thought, although this is not so distinct in reality as the patient imagines. The rapid exhaustion after mental effort increases the morbid feelings in the head. Circum-

scribed hyperæsthesias of the scalp are frequent, and even the combing of the hair may be borne with difficulty.

There are usually irritative phenomena in other sensory tracts, dependent on great sensitiveness to external impressions. Flashes of light, tinnitus, and other subjective phenomena alternate with one another. The hyperæsthesia to light sometimes causes great suffering, especially if accompanied by attacks in which specks and flashes of light fill the field of vision. We also find liking for or antipathy to certain forms of smell and taste. The patients may suffer from loud noises, and even their own voices may produce an intolerable sound.

This irritability of the senses is combined not infrequently with great subjective weakness and rapid exhaustion, so that the field of vision soon becomes obscure or hearing becomes indistinct. The same mixture of excessive irritability and exhaustion is found in the muscles and viscera. The patients often complain of heaviness and a tired feeling in the limbs after slight exertion, and of numbness, pricking, and formication. A common symptom is the feeling of painful exhaustion in the neck and back; it may appear spontaneously, on pressure, or on motion. When there is also hyperæsthesia of the spinous processes the entire condition is known as spinal irritation. Muscular restlessness may also become one of the most distressing of all the symptoms. Now and then there may be a spasm of this or that muscle, especially in the legs, but general spasms are not observed. Fibrillary twitchings occur, particularly in the facial muscles, and this symptom may be important in the differential diagnosis between dementia paralytica and neurasthenia. The paretic does not notice the twitchings; the neurasthenic devotes his entire attention to them. The latter also notices, with dread, slight disturbances of speech, especially the use of wrong words during excitement.

A description of the hypochondriacal complaints concerning digestion would lead us too far; other organs also give rise to numerous symptoms. Of much greater im-

portance are the disorders of the blood-vessels and the circulation. Palpitation of the heart may be so severe that the patient feels and hears the cardiac impulses; to this is generally added a feeling of fright and restlessness, which is apt to be followed by slight hypochondriacal delusions. Such attacks may be associated with dilatation of the left pupil, and it is probable that both symptoms are due to irritation of the sympathetic nerve. Paralyses of the sympathetic occur very often in neurasthenia. Blushing when surprised or when spoken to is one of the most annoying complaints of the neurasthenic, and is aggravated when they concentrate their attention upon it.

Paroxysmal attacks of heat and throbbing of the vessels may occur over the entire body. These sensations are extremely annoying because they also extend to the internal organs and give rise to distressing restlessness. These conditions, which occur especially after emotional excitement, show that the entire central nervous system is irritable and rapidly exhausted, and also enable us to understand other peculiar neurasthenic conditions. We know that the feeling of fear is accompanied, as a rule, by irritation and paralysis of the vasomotor system, and that feelings of vertigo develop in a similar connection with the vasomotors. It is very probable, therefore, that implication of the sympathetic explains the various forms of morbid fears in neurasthenia. It must be admitted, however, that visible symptoms on the part of the vascular system are not always present. But that these conditions do result from vascular changes is shown by the fact that they are usually attended by more or less severe vertigo.

The morbid fears which will now be discussed are observed, as a rule, after definite causes. The most common form is the fear of places which develops upon entering a square, an empty street, or a lonesome region. The patient is suddenly attacked by the fear that his strength will leave him and that he will be unable to walk farther. This is accompanied by a feeling of oppression, palpitation, constriction of the throat, an outbreak of cold

sweat, with tremor and weakness of the legs. If the patient turns about or succeeds in reaching a side row of houses, the feeling of fear disappears. The condition is accompanied by a mere indefinite fear of some impending danger, and is often overcome by the company of any person who happens to pass. Height vertigo may develop with similar symptoms sometimes if the patient is seated alone near a high window, while he is perhaps able, in company, to climb a steep cliff. Repetition increases the severity of the attacks as a rule, and hence the dread of a similar position facilitates their occurrence. In other words, mental irritability must be combined with weakness of the vasomotor system in order to produce such conditions. The same combination probably obtains in other allied conditions, such as fear of crowds or of closed rooms. After the attack has subsided the patients sometimes laugh at their own folly, but are unable to repress the fear on the next occasion. The fear is a true imperative feeling.

In this connection we may mention imperative acts so far as they are independent and not related in thought to fears or delusions. Some homicides, thefts, rapes, etc., seem to be explicable in this manner, although in many of these cases careful examination shows that the acts are based on hallucinations or delusions. When the latter are absent we usually find an honest attempt on the part of the patient to struggle against the morbid impulse, which appears incomprehensible to him.

But all the symptoms mentioned do not lead to a general change of mental life which may be regarded as neurasthenic insanity. It is merely to be noted that various forms of insanity, such as mania, melancholia, paranoia, dementia paralytica, present a peculiar appearance when they develop upon a neurasthenic basis. Indeed, it would be preferable to discuss the condition in the section on general symptomatology, were it not for the fact that the mental phenomena of neurasthenia possess such great clinical importance.

The causes of neurasthenia include all those which give rise to mental and nervous diseases in general and which are shown in exhaustion of the entire nervous system. An important cause is mental strain associated with a sense of responsibility in a position of influence. Hence active talented men of prominence are especially prone to this affection. Otherwise the female sex predominates on account of its greater emotional excitability and diminished power of resistance. Youth entails some danger form overwork in school. At the period of puberty, premature development of the sexual sense with excessive masturbation gives rise to exhaustion. Cases of neurasthenia again grow more numerous at the menopause and also at the period of senile involution. Middle life is most endangered by the external conditions. Sedentary habits (in officials, merchants, students) and continued dissipation are frequent factors. Insomnia is also a very prominent cause. Exhausting diseases of all kinds, whether acute or chronic, lead to the development of neurasthenic conditions.

The course of the mental disorders of neurasthenia is rarely uniform. As a general thing they develop slowly; more rarely they occur suddenly after exhausting diseases. The variations in their course are usually not dependent on external causes; improvement and exacerbation may occur with equal surprising rapidity. A word or look may suffice to make the patient feel worse. The influence of the weather is manifold and varies in every case. The subsidence of all symptoms is sometimes so marked that the disease is not noticeable for months or even years. In the majority of cases the disease lasts until the end of life, though complete recovery has been observed in a few cases.

The prognosis of the mental disorders of neurasthenia is more favorable when the condition is due to demonstrable external agencies. Cases in which imperative feelings occur are more favorable than those in which there are imperative ideas. Neurasthenia, *per se*, does not lead to

dementia, but this termination may occur in any other psychosis which develops on a neurasthenic basis.

The diagnosis of neurasthenia as the basis of an existing mental disorder may be extremely important to the practitioner. He must differentiate the affection from some other psychosis or severe disease of the nervous system and from dementia paralytica.

The depression of a beginning psychosis is more pronounced than that of neurasthenia and is not relieved so easily by external stimulation. For a long time it may be difficult to exclude organic nervous diseases, such as focal lesions of the brain, diffuse sclerosis, tabes, and the differential diagnosis can only be made after prolonged observation.

Most important, however, is the differentiation of neurasthenia from beginning paralytic dementia. The main feature of the latter is the impairment of judgment advancing to dementia, but the mental weakness of the neurasthenic is merely a ready exhaustion, while the judgment of external circumstances is not materially affected so long as they do not refer to conditions within the patient's own body. In the latter event the patient observes himself with morbid care, while the paralytic pays no attention. This is very evident in the case of speech disorders which, in neurasthenics, may give rise to the fear of impending dementia paralytica. In the latter affection, however, they are unnoticed or disregarded by the patient. Other motor disorders, such as contraction or inequality of the pupils, tremor of the hands and legs, may occur in both affections, but are less frequent and persistent in neurasthenia. Furthermore, imperative thoughts are not met with in paresis. In advanced dementia a mistake is no longer possible.

The discussion of the treatment of neurasthenia does not come within the scope of a work on insanity, but many useful hints will be found in the general section on treatment. It may here be remarked, however, that the neurasthenic often derives more benefit from travel than from a stay in

an institution. When disease is associated with pronounced chronic mental disorders, the treatment, in the main, must be directed against the latter.

Acute Forms.

Acute forms of neurasthenia are always acquired and follow immediately upon certain definite causes. They are conditions of exhaustion of the nervous system in which the implication of the mental processes is the main factor. They afford a transition to the succeeding group of toxæmias in which the morbific cause acts even at the moment of the development of the disease. The relation between the two groups is also shown by the fact that certain of these exhaustive conditions, viz., febrile delirium, are attributed to an organized virus. Indeed, it is doubtful whether some of the mental disturbances of infectious diseases are not due directly to such a virus, and that the increase of temperature has no effect. On the other hand, sudden febrile conditions, which depend on irritability of the exhausted nervous system, are sometimes observed in protracted and exhausting constitutional diseases. Perhaps chemical poisons produced within the body play a part in such cases. We refer here mainly to those conditions which develop after the termination of an infection. They may appear at the close of an exhausting febrile disease, or a little later when exhaustion becomes more distinct during convalescence. We may also mention those conditions in which the nervous exhaustion is due to imperfect nutrition, as in shipwrecked individuals, etc. The delirium of dying individuals is allied to these conditions.

The lassitude after sleepless nights, accompanied by grave cares and worry, and after excessive mental work, may be the cause of acute neurasthenia in which a dreamy impairment of consciousness may be the chief element of the mental disorder. There is an inability on the part of the patient to realize clearly his impressions from sur-

rounding circumstances and also his own thoughts. He finds himself in a state of complete helplessness and becomes restless and anxious, because all external impressions have an uncanny character. His utterances are correspondingly confused, and indeed the entire condition has been described as asthenic confusion. The confused fear leads occasionally to dreamy irrational acts which have an undeniable resemblance to those committed on an epileptic basis. This resemblance is so much more important clinically, because after the act there is usually a greater or less defect of memory and occasionally a temporary complete loss of consciousness. That this condition is due to exhaustion of the brain is evident from the fact that rapid and complete restoration follows sleep and improved nutrition. It need merely be mentioned that the combination with hallucinations and delusions may give rise to morbid conditions which correspond to other psychoses, but these do not belong necessarily to the exhaustion of the brain now under discussion. Even in these cases complete recovery usually occurs in a few weeks if the patient is transferred to better surroundings and secures sufficient sleep. The transition to dementia is rare; the termination in death from progressive bodily exhaustion is more frequent.

The relation to bodily exhaustion is still more distinct in those forms of acute neurasthenia which directly follow profuse losses of blood, difficult childbed, and other exhausting conditions. As a general thing, hallucinations are then more prominent. Upon them depend, in the main, the confusion and anxious mood which lead not infrequently to sudden acts of violence, especially suicide, and to sudden running away. These conditions last a few days and usually terminate as suddenly as they began; but irritability and weakness of memory may continue for some time. The danger consists in the sudden failure of the vital energies, which must be combated by stimulants (wine, whiskey, camphor), hypnotics, and proper feeding.

Finally, acute conditions of a similar nature may follow

sexual excesses of all kinds. Here again the combination of religious delusions and nauseous olfactory hallucinations dominates the clinical history. The prognosis is also favorable if the general condition can be improved and the causes removed.

H. MENTAL DISORDERS DUE TO POISONS.

A certain class of mental disorders is due to the action of poisons which enter the body from without. In a textbook on insanity we cannot enter in detail into a description of the various forms of poisoning, but some of the more important symptoms will be considered, inasmuch as the practitioner may be placed in such a position that he is compelled to infer the causal poisoning from the mental symptoms alone.

These conditions develop either after a single severe attack of poisoning or after the protracted and constant administration of poisonous substances. The action of alcohol will chiefly concern us in both forms. Striking mental changes may also occur after a few other rapidly developing poisonings. After carbonic-oxide inhalations, a preliminary period of unconsciousness is followed for days by a condition of confusion which is distinguished with difficulty from similar conditions, unless the previous history is known. A notable feature, however, is the absence of hallucinations, and violent headache is also very striking. During the period of complete unconsciousness the diagnosis depends upon the other toxic symptoms, as described in treatises on toxicology.

When delirium occurs in the conditions of unconsciousness produced by the so-called anæsthetics, it is generally of a cheerful character, occasionally with a sexual coloring as in nitrous-oxide anæsthesia. It resembles the acute intoxications after taking opium and hasheesh. Fantastic hallucinations are very numerous in these forms.

The higher mental activities suffer so much more markedly the more often the poisonous substance acts.

Among the anæsthetics, sulphide of carbon is still to be considered in this respect. After some prodromes of an indefinite nature, such as pressure and pain in the head, a feeling of dizziness and dulness, a more or less distinct condition of excitement develops after the poison has been acting for a few weeks. The individual becomes very lively, talkative, and irritable, sexual desire is increased, and occasionally the appetite becomes insatiable. At intervals there is a temporary depressed mood; then memory becomes distinctly impaired in many until they become irrational, and at the same time speech is stuttering and the tongue is moved with difficulty. Impairment of vision and ringing in the ears are also observed. Spasms and fibrillary twitchings in different muscles are rarely absent entirely, and these, combined with great muscular weakness, present a picture which somewhat resembles dementia paralytica. This possibility must be kept in mind in the vicinity of India-rubber factories, and the patients can then be guarded against relapses by permanent removal from the injurious occupation.

Dementia paralytica may also be suspected in poisoning with iodine and bromine, in lead encephalopathy, and in mercury psychoses. We may also remind the reader of the violent delirium of acute phosphorus-poisoning. A little more attention must be devoted to the action of morphine.

Morphinism, or the morphine habit, results from the repeated abuse of the drug. As a rule, it is first taken under medical supervision in order to relieve various painful affections. When injected under the skin it produces such an excellent sedative and hypnotic action that a desire arises for the repetition of this effect, especially as it is often associated with dreams of an agreeable character. When given during periods of exhaustion morphine produces greater activity and a general feeling of well-being. Gradually it becomes indispensable, and at the same time the dose must be increased to produce the desired effect, until finally 2.0–3.0 may be taken daily.

The mental symptoms may be due directly to the use of

the drug, while other so-called abstinence symptoms follow its withdrawal. The former include a striking change of character; irritable, morose, misanthropic, the patient grows more and more indifferent to outside interests and becomes more and more selfish, until finally all his desires turn around the satisfaction of his hunger for morphine, which gradually loses its pleasant effects. As a rule, the mental disorders are confined to the domain of ethical ideas, while intelligence is affected only in so far as the memory and power of endurance in mental work are concerned. Chronic morphinism hardly ever leads to dementia, and when this appears to be the case another psychosis should be suspected. In every case, however, there is a diminution of resolution and power of action. At times, especially during the periods of abstinence, hallucinations occur, often combined with feelings of fear.

The bodily symptoms of morphinism will not be described here; they may be found in any text-book of neurology.

It is important to remember, in regard to the diagnosis of doubtful cases, that the morphine is excreted in the urine, where it may be found by chemical tests.

The term alcoholism is applied to all the morbid conditions which are due to the abuse of alcoholic drinks. It is to be kept in mind, however, that the alcoholic basis of some psychoses merely gives to them a special coloring, but that they do not forfeit their own characteristics.

The simplest form of alcoholism, viz., an attack of drunkenness, shows some of the most important elements of the disease. The mental processes appear to be accelerated and facilitated in a fit of drunkenness. The increased self-esteem leads to boldness and jollity. At first the bodily powers are also increased. Increased necessity for movement is shown by singing, screaming, laughing, dancing, and increased sexual desire is not infrequent. In a little while, however, the individual finds it difficult to concentrate his attention upon internal as well as external processes; the interpretation of external impressions

also becomes slower. The æsthetic feelings and ideas are first extinguished in the drunken man, although he still retains and expresses the feeling of increased power. This offers a marked contrast to his foolish actions. A characteristic feature is his denial of his excited condition and its cause. Not infrequently there is an unfounded change of mood from joviality to depression. With the constantly increasing loss of the power of attention, the individual enters the condition of complete drunkenness. During the transition deceptions of the senses may be manifested; as a rule, these are illusions, not true hallucinations. Consciousness is lost more and more, and while speech becomes confused, motor disorders of various kinds end the scene.

A termination in conditions which resemble dementia after passing through excitement of all the mental functions, accompanied by changes of mood and early disappearance of ethical feelings, by a tendency to denial of drunkenness, by sexual excitement, hallucinations, and motor disorders—all these symptoms, either separately or combined, form part of chronic alcoholism. As a matter of course there are numerous transitions between the single drunken fit and the symptoms of chronic alcoholism. The fact that severe conditions of drunkenness develop in some individuals after taking very small amounts of alcohol shows that these persons, whether as the result of heredity or of acquired diminution of mental vitality, are less capable of resistance and have a predisposition to mental disturbances, whatever may be the exciting cause.

In such individuals there is a tendency to the development of numerous hallucinations, especially of sight. These conditions last only a few hours; the contents of the hallucinations are frightful in character and consciousness is in a dreamy state. Acts of violence may be committed while only a summary memory remains. In old topers such a condition may also be superadded to the permanent alcoholism. But when an apparently healthy individual falls into this pathological drunkenness, these severe results

of a single poisoning with alcohol can only be explained on the hypothesis that his central nervous system is below par. Sometimes these conditions do not develop until some time after the ingestion of alcohol, especially after the passions have been aroused. From a medico-legal standpoint it is important to remember that this pathological drunkenness is always associated with unconsciousness and is usually followed by loss of memory of the events which happened during it.

Chronic alcoholism embraces all those mental and physical disturbances of function which are produced by the habitual abuse of alcohol. Drunkenness is always associated, however, with other causes, and is indeed often the result of such causes, viz., family cares, worry, etc.; or the love of drink may be merely a part symptom of an underlying general morbid predisposition. The abuse of alcohol also acts by giving rise to purely physical disorders, particularly to diseases of the digestive organs and to changes in the vascular apparatus.

The main element in the psychical changes is the progressive loss of ethical and intellectual functions, the former being usually first affected. The notions which are based on customs and morals, and which, in connection with the personal elements of the temperament, impart to the latter its special coloring—in a word, the character of the patient gradually changes and finally is lost. He loses the capacity of acting according to principle. His views concerning honor and propriety become lax, and all the higher feelings yield to the impulses of the moment. Egoism becomes the mainspring of all actions, and finally everything is sacrificed to the desire for drink, which alone is capable of relieving temporarily the distressing results of the alcoholic poisoning. At the beginning there may be a severe struggle between the growing passion and the patient's self-control, but usually the latter succumbs. The habitual drunkard finally becomes a confirmed liar, upon whose statements not the slightest reliance may be placed. The moral degeneration

progresses until nothing will prevent the individual from committing even deeds of violence in order to obtain drink.

This loss of character becomes evident long before the apppearance of intellectual weakness. For this reason the individual is handled with difficulty, inasmuch as the intact intelligence makes it appear improbable to the majority that his offences against law and morals are due to a pathological mental disturbance. It cannot be denied that at this stage the patients are not proper subjects for asylum treatment, because the necessity of removing all opportunities for obtaining drink compels us to place them in wards in which their personal liberty is greatly curtailed. In such wards they cannot be kept long because they are unavoidably brought in contact with many sad experiences. The patients should be placed in inebriate asylums, because experience has shown that abstinence from alcohol for one to two years occasionally permits the redevelopment of an intact, morally vigorous emotional life, and often warrants a return to former pursuits. When this does not take place the inebriate asylum will prevent further degeneration.

The docility of patients who are deprived of alcohol is sometimes surprising. The fact that this is most marked at the beginning of such treatment proves that it is due to a morbid condition of exhaustion. In general, the nervous system becomes impaired under the prolonged abuse of alcohol, and hence so many neurasthenics are found among drunkards. Their irritability is often extreme, and the slightest provocation may give rise to violent passion and outbursts of rage, in which all consideration for those about them is lost. Sometimes the sudden anger is vented upon their own person. Profound depression is apt to occur, especially in the morning, sometimes with a tendency to suicide, but after renewed ingestion of alcohol this mood disappears and may change to the opposite. This frequent change corresponds to their indecision in acting and to their weakness of will power.

Even at this stage the intelligence often remains intact. Occasionally impairment of memory first develops, then there is rapid loss of the power of attention, especially in independent mental activity. The patient may take intelligent interest in a conversation, but can no longer read a book attentively or do scientific work. But in every case the impairment of intelligence is recognizable in the one-sided and insufficient comprehension and interpretation of new impressions, so that thought is confined to the patient's own immediate interests. In this way there is a gradual decay of mental life which may progress, often after the lapse of many years, to complete dementia. This is hastened by the development of other psychoses or severe symptoms in other parts of the nervous system.

Two factors characterize alcoholism when the symptoms just described are complicated by temporary or permanent psychical disorders, viz., the character and great number of the hallucinations and the frequency of the delusion of marital infidelity.

The hallucinations are extremely mobile and variable, often of a very fantastic character. In great part they may be mere illusions, due to the imperfect interpretation of actual occurrences. Lights and movable objects play a great part in this process. A feature common to all these hallucinations is their elementary and fantastic character. Lights, flames, and stars alternate with clouds; a spot forms before the eye, assumes regular outlines, a head or claws appear, and gradually is converted into an animal; this changes its position, disappears, then returns to its former position. All possible and impossible animals may appear, but small ones predominate. They run around the room, jump upon the patient, grow, disappear in the floor or wall. He sees fire, combats, battles hordes advance upon him. These appearances are generally of a frightful, rarely of a pleasant character. In the latter event birds, brilliant flowers, and beautful landscapes are seen. The auditory hallucinations are likewise of an elementary character, such as roaring, tinkling,

hissing, shooting. When they assume a definite shape their contents are usually threatening, mocking, insulting. The large number of sounds is also characteristic. The same features are found in the rarer cases in which smell and taste are affected, and hence we can understand the peculiar symptoms presented by the alcoholic delusion of persecution. To make the description complete, a few farther details are requisite. Hallucinations of feeling occur in a similar way; the patients feel animals entering the skin and gnawing their limbs; the fire burns their hair and skin. Such changes of feeling sometimes develop in the sexual apparatus, and are then apt to be associated with the delusion of marital infidelity and unfounded jealousy. In fact, sexual life is very commonly drawn into the morbid symptoms, so that the delusion of jealousy is sometimes regarded as peculiar to alcoholism. In some cases it may be due to increased desire associated with rapidly progressing impotence, as occurs especially in advanced cases of alcoholism. The delusion of jealousy is not always founded on hallucinations, but irrelevant words and gestures are interpreted in the sense of the delusion. Sometimes the patients (male and female) accuse those around them of making improper proposals.

So-called acute alcoholic insanity generally begins at night, quite suddenly, and may disappear within a few days. This condition is distinguished from the closely allied delirium tremens by the predominance of sexual ideas, which are combined into a confused system with the other symptoms, consciousness remaining comparatively clear; olfactory hallucinations are quite frequent; the motor disorders which are prominent in delirium tremens are not pronounced.

A few words with regard to the motor and sensory disorders of chronic alcoholism in its ordinary form. Tremor of the tongue, facial muscles, and hands is commonly present, and is more distinct in the sober condition than during the immediate effect of alcohol. Localized cramps, for example, in the calves, are rarer. Distinct paralyses

are not very common; pareses are more frequent. These symptoms are often due to peripheral neuritis. Circumscribed anæsthesias or pains in the limbs may be very annoying and may form the basis of delusions. Visual impairment may result from retinitis and temporary changes in sight to circulatory changes. Vaso-motor paralyses of various kinds occur in alcoholism; for example, enlargement of the vessels in the face, degeneration of the walls of the vessels and the heart. Affections of the digestive tract also influence the patient's mood.

Before discussing the course and termination of chronic alcoholism, we must examine the peculiar condition known as delirium tremens. It rarely follows a single excess and never follows a single intoxication in an otherwise temperate individual. It occurs usually after some exciting cause, such as an injury or a pneumonia, but may also develop independently during the course of alcoholism. Hard drinkers of whiskey rarely escape it, although its frequency depends upon other external circumstances, especially upon the general nutrition. It is rare when the alcoholism is produced by good wines and beer. It is unnecessary to enter again in detail into the symptoms which are common to delirium tremens and to alcoholic insanity. The contents of the hallucinations are approximately the same in both conditions. The visual hallucinations generally have the characteristic of small size and are also extremely numerous. It is very probable that the appearance of animals in such large numbers is due to disorders of accommodation and to changes in the fundus oculi, *i.e.*, their development is in great part peripheral. They are terrifying to the patient, especially as they are associated with corresponding hallucinations of hearing and the tactile sense. Among the latter the feeling of crabs, snakes, spiders, and ants upon and in the skin is especially characteristic, and upon them depends, in part, the constant picking at the bedclothes which is almost always observed at the height of the disease.

During these hallucinations consciousness is profoundly

impaired, but not entirely lost, because the patients will answer questions for a moment when addressed in a peremptory tone. Insomnia is prominent among the prodromes, likewise a great susceptibility to fright, and these symptoms are always present in the fully developed disease. As consciousness is not entirely lost and attention can be aroused momentarily, the conduct of the patient often appears awkward and foolish. This impression is strengthened by the mobile restlessness of the patients and the manner in which they are constantly occupied with the objects of their hallucination. The grabbing for the rapidly-moving apparitions and the conversation with the innumerable beings that storm upon him often converts the scene into a lively spectacle which may exhibit even comic effects. In other cases great anxiety predominates, but a delusion of persecution is usually not expressed in set terms. The inimical contents of the hallucinations may give rise, however, to acts of violence against the patient's own life or against those around him. Even apart from definite hallucinations, the consciousness is filled by terrifying thoughts, as is evident from the fact that patients suffering from delirium tremens and chronic alcoholism very often assert that they or others in their company have committed a murder.

The hallucinations are usually most marked as soon as the patient closes his eyes in order to fall asleep, probably on account of the pressure on the eyeball. In the same way a convalescent, by closing the eyes, may reproduce visual hallucinations which had disappeared.

The motor disorders of delirium tremens are of great importance. Apart from the constant motion due to the hallucinations, there is also direct muscular restlessness. This is shown by purposeless walking and by the pushing away of objects which happen to be in the way. Bathed in perspiration and completely exhausted, the patient may break down, or after a few moments of exhaustion and apparent quiet the scene begins anew.

Motor disorders due to direct central irritation also appear in the form of rapid twitchings of the facial muscles, especially around the mouth and eyes, and in the shape of nystagmus; in the form of tremor they extend to the trunk and limbs. Tremor is most distinct in the extended fingers and the protruded tongue. Speech is thick and difficult, chiefly from loss of power. This is also shown in the uncertain and tottering gait, but in moments of excitement and rage this is lost and the patient's strength may be almost incredible. General epileptic convulsions are not very infrequent.

As the reflex irritability is very much increased, the limbs are tossed about in bed and slight injuries are often produced in this way. Even severe injuries, such as fractures, may be unnoticed on account of the impairment of consciousness and perhaps diminished sensibility to pain. Uncomplicated delirium tremens is usually apyrexial, but in the severest forms there may be an extreme rise of temperature. In such cases death is the usual termination. In others death may occur from general exhaustion, without fever; the pulse becomes soft and small, an irregularly flickering delirium ends in complete loss of consciousness, feeble movements are still indicated, the twitchings become subsultus, and the vital energies are extinct. The average mortality is about twenty per cent, death being due to exhaustion, pneumonia, severe injuries, suicide, and accidental complications. Cases that recover usually run their course in three to eight days. Sometimes a short sleep seems to indicate recovery, but this may be delayed, sometimes for several weeks, by a fresh exacerbation of the excitement. In mild cases a profound and prolonged sleep checks the delirium so completely that the patient awakes entirely well.

The relief of the insomnia constitutes the most important element of treatment. At the onset hypnotics are generally useless, but they become very effective toward the close of the attack. Chloral hydrate is the preferable remedy unless contra-indicated by cardiac disease. Otherwise the

treatment is restricted to careful feeding and to measures necessary to protect the patient and those about him from injury. Everything with which the patient might injure himself or others should be removed. Personal restraint by straight-jackets, etc., should not be permitted because pneumonia and œdema of the lung are apt to develop. In addition to nourishing food, especially milk, moderate amounts of alcoholics should be given. This should also be done in all cases of alcoholism which come under treatment for some other, especially febrile, disease or on account of an injury. Under such circumstances the sudden abstinence from alcohol may give rise to an attack of delirium tremens.

After an attack of delirium tremens the tremor of the limbs, especially of the hands, may last for a long time.

We find the condition returns to its former status, and we thus return to the point in the further course of chronic alcoholism which we reached a little while ago. If this course is not interrupted by the conditions of excitement already described, it is tolerably uniform in its progress. But there is one form of mental disorder which may occur in a chronic drinker after a single excessive intoxication or several rapidly following excesses. True alcoholic poisoning is then combined with the already existing general change. The clinical history then produced contains the majority of the other symptoms pressed close together and developed to a high degree. Hence there is a great similarity to galloping dementia paralytica. The mood is very exalted, immoderate ideas of grandeur develop, associated with great loquacity and muscular restlessness, and pupillary differences, facial paralyses, general tremor, and great difficulty of speech complete the deceptive impression of dementia paralytica. But this alcoholic paresis does not usually advance to dementia; within a few weeks or months it disappears and the patient recognizes his condition. Recovery is permanent in so far as it is not affected by the other symptoms of chronic alcoholism. This condition must be distin-

guished from the dementia with paralyses which may develop in a remarkably slow manner during the course of ordinary chronic alcoholism. In the former condition epileptiform paralytic attacks are rare, while the combination of alcoholism with epilepsy is especially apt to provoke the slow process into dementia. As a matter of course, the alcoholic patient may also be attacked by true paralytic dementia, but the latter differs in its clinical course from dementia with paralyses. Apart from the lesser intensity of all the symptoms, it lacks the progressive course, and if gradual and complete abstinence from drink is secured we can effect a standstill and considerable improvement. Indeed, chronic poisoning with alcohol rarely leads to the highest grades of dementia.

A few words must be devoted to so-called alcoholic epilepsy. Intense alcoholic poisoning in a chronic hard drinker, as well as in a moderate drinker, may give rise to a condition of profound disturbance of consciousness, which lasts long after the drunken fit, is associated with epileptic convulsions, and, on account of the development of hallucinations, may closely resemble certain epileptic states and equivalents. The resemblance is increased still farther by the very rapid course of the symptoms, their rapid cessation, and the loss of memory for events occurring during this state. Individuals are attacked who were not previously epileptic, although epileptics who have become addicted to alcohol may also exhibit similar conditions. If this condition develops only once, it may be called a pathological drunkenness in the sense already described. These convulsive seizures are apt to return after every severe intoxication, and to such cases the term alcoholic epilepsy is best suited.

After the ingestion of enormous amounts of poor alcohol, the highest degree of intoxication may be manifested from the start in complete unconsciousness and paralysis, and this often terminates fatally in a short period from acute œdema of the brain.

As a general thing chronic alcoholics die, before they

have reached the hightest grades of mental and physical decay, from some intercurrent organic affection. The character of the alcoholic drink is of great importance as regards the rapidity of the entire condition.

Alcoholic stimulants that contain fusel oil are much more dangerous than others; the brain then suffers from the action of the adulterations. For this reason alcoholism is so wide-spread among the lower classes. It is much less frequent among drinkers of beer and wine.

The constant drinking of smaller amounts of alcoholic stimulants is usually much more dangerous than periodical excesses. Dipsomania (*vide* page 96) is not one of the causes of chronic alcoholism, but when this condition coexists in a case of chronic alcoholism it constitutes an important factor, and such patients usually fail very rapidly.

When simple psychoses develop upon an alcoholic basis, we must distinguish between the temporary effect of alcoholism and an independent psychical affection in an habitual drinker. In the former event, severe symptoms are especially manifest at the start and the disease also runs a severe course. Alcoholism may not be inferred, however, from the slight power of resistance to small amounts of alcohol, because such intolerance occurs in many nervous systems which are below par. It is doubtful whether the psychoses of habitual drunkards which are due to some other exciting cause exhibit any specific symptoms.

Apart from the numerous changes in other organs, anatomical changes develop in the brain and meninges after alcoholism has continued for a long time. Inflammations and thickening of the meninges, atrophy of the brain substance, especially of the cortex, and internal hydrocephalus then become prominent. But the motor disorders, especially paralyses, often result from diseases of the spinal cord and its membranes and from inflammations of the peripheral nerves.

As the treatment of the psychoses which are associated with alcoholism is based on general principles, it only re-

mains for us to make a few remarks on the treatment of alcoholism. Complete restoration cannot be expected, and we must be satisfied with an amelioration of the symptoms. We may repeat that most can be done by diminishing the quantity and improving the quality of the noxious poison. There are no positive remedies or curative methods. Permanent abstinence from alcohol prevents farther progress, but very few will decide upon permanent seclusion from the world if a tolerable equilibrium is obtained after the disappearance of the most severe symptoms.

J. FEEBLE-MINDEDNESS (IMBECILITY AND IDIOCY).

The artificial character of our classification is again shown very clearly in this section. The extreme grades of idiocy under the form of cretinism apparently have nothing in common with the milder forms of feeble-mindedness, especially if they are not congenital but remain after a psychosis. These different groups are arranged in one class because they belong together clinically. The antitheses at both ends of the series are joined to one another by numerous transitions whose essential clinical feature is mental weakness. The milder conditions of mental weakness which result from other psychoses must be considered separately from profound dementia, and, in view of their clinical relationship, in conjunction with congenital feeble-mindedness or imbecility. Clinically, the latter approaches the mild grades of idiocy in which there are only slight anatomical changes. Then a slight step leads clinically and anatomically to the higher and highest grades of idiocy and cretinism. These are distinguished from the acquired forms of dementia by the congenital anatomical changes.

Concerning the first group of acquired feeble-mindedness little need be said (although it is one of the most extensive classes), because it is a termination of many functional simple psychoses. One of its most striking features is diminished endurance in mental work,

while the individual ability in the customary occupation may still be sufficient. Indications of the antecedent psychosis are wanting, while the mental decay which passes into dementia still contains such elements and thus shows that the morbid process is extending more deeply. In the feeble-mindedness to which we refer this has ceased and the condition has become a permanent sequel. Unlike neurasthenia, the ready exhaustion is confined to mental activities, while other nervous functions are not enfeebled. But the higher psychical functions, especially in the ethical field, are also impaired, and defects in moral views are noticeable when actions are required which call for independent decision.

In congenital feeble-mindedness or imbecility the condition differs merely in its mode of development, not in its clinical aspects. Here there has never been a thorough comprehension of the depth of moral convictions, and the discrepancy between morals and the acts of an imbecile depends essentially upon his lack of judgment, which is often manifested, particularly in this connection. Very often imbeciles exhibit excellent mental attainments in other circumscribed fields. In matters which depend chiefly on memory they often develop great cunning. Otherwise the observation and comprehension of the outer world are confined to objects under their immediate notice and to the conditions and interests of their own person. If their wants are satisfied they may lead quiet, harmless lives; if not, we may be surprised by outbursts of anger and violence which show that self-control is entirely wanting. No sorrow or remorse is felt after the period of excitement has passed. The directness with which their resolutions spring from the internal conditions of the body shows the close relationship to the impulsive acts of idiots.

From a causal standpoint feeble-mindedness which results from brain disease, injury to the skull or concussion in early childhood, stands midway between congenital imbecility and the conditions of mental weakness following

a psychosis in mature years. Clinically these cases show no material difference. But if an imbecile is attacked by a psychosis in later life, the course of the disease exhibits distinct peculiarities. Awkward and childish conduct becomes prominent. The morbid manifestations of the changed mood far exceed the usual mean. The expression of exalted self-esteem or of timid self-depreciation can no longer be measured by the possible. Delusions of grandeur occur in degrees which are otherwise found only in paralytic dementia. The disease presents unforeseen and surprising changes. Many incomprehensible features in a psychical disorder which develops upon a basis of feeble-mindedness can only be explained by this basis. These patients furnish numerous instances of conflicts with the law and public morals.

The backwardness as regards the higher psychical feelings may be more distinct than the imperfect development of the intellect. The term moral insanity is often used wrongly for such conditions. The moral defect never exists without implication of the other mental faculties, and the former merely predominates.

The impossibility of acquiring the higher moral ideas as a living reality entails the inability of understanding their worth in general. These individuals confine all their feelings and endeavors upon themselves and their own advantage. The mentally normal individual in modern society must always be able to comprehend the reasons which prevent him from recklessly satisfying his immediate selfish desires. This ability is lacking in the feeble-minded individual, although he grows up in the midst of civilization, from whose blessings he constantly draws an abundant supply. The laws of morals may be studied and memorized, but they remain dead masses of ideas.

The absence of sympathy is shown at an early age by the tendency to torture animals or to enjoy their sufferings. Indifference is manifested toward the nearest relatives, even toward the parents. In some cases such phenomena appear with more or less distinctness at certain intervals,

and we may here remind the reader of our former remarks on periodical psychoses. In childhood these individuals are lazy and lying, the despair of their parents and teachers; in youth they become vagabonds, commit theft; among them we find congenital criminals, especially thieves. They soon become the plague of the authorities, are not amenable to punishment, and regard the laws merely as police regulations whose results they must avoid. Finally, they gratify their propensities impulsively, without regard to consequences. There is an uncontrollable desire to masturbate and to gratify their sexual impulses, even in early youth.

Immorality and coarseness, cruelty and malice, may appear so much more deserving of punishment because they are associated not infrequently with a certain degree of dialectic skill. Delusions and hallucinations are absent. It is then difficult to demonstrate intellectual defects, although one circumstance aids us in disclosing the inhibition of the development of mental life. In school these individuals may be the equals of their companions up to a certain period, but a striking feature is their unequal power of attention. Then, almost suddenly, they remain backward, often at the period of puberty, and cannot keep pace with their comrades when independent thought is required. It seems as if the internal development of the brain suddenly ceases. This defect becomes more evident in the choice of a life career. They are unpractical individuals. If the other members of the family are normal, the nature of the feeble-mindedness becomes more distinct from the contrast. If the hereditary taint is pronounced, the morbid condition becomes so much clearer to the physician; but the internal contradictions must be shown so much more carefully to the legal authorities. Despite their apparent cunning, the acts of imbeciles often disregard the ordinary rules of prudence. The chief object is always the satisfaction of the moment; whether this is proportionate to the means employed is immaterial. A theft is committed in order to spend the proceeds in ridiculously

useless articles. They employ intrigue and swindling methods to achieve ends which could be obtained much more easily by honorable methods. There is no reflection interposed between the desire and the deed, but its execution is effected by impulse. A criminal deed is sometimes due to the impulse of imitation.

The mental ability fails still farther when a simple conception suffices to convert another associated concept into an actual deed. But such an imperative act differs essentially from that performed by a neurasthenic. The latter struggles continually against the idea which is constantly cropping out and demanding realization. The imbecile is left to the play of his ideas, without reflection or internal struggle. It is true that these processes are associated with vague feelings, but the imbecile does not comprehend their connection with his notions and acts. Many acts appear to be explained in this way, but the psychological explanation is often found rather in the mind of the observer than of the patient. For example, arson committed by imbeciles may only be explained as the gratification of revenge. It is true that this reason actually holds good in not a few cases, but we must not always rely upon this when the young incendiaries declare that the deed was done without reason. As a matter of fact, the thought of fire and its production may have been almost simultaneous, or the childish delight in flickering flames may have been sufficient reason for starting the fire. In other cases homesickness is the cause of arson by imbeciles, because they imagine that they can then change their abode. Here, again, the reckless choice of means for attaining personal ends permits of no reflection on the other bearings of the deed. The impossibility of forming higher ethical notions enables us to recognize the intellectual in addition to the moral weakness. In addition to the inability of recognizing vices as such, feeble-mindedness is demonstrated either by the slight power of judgment or the diminished mental activity. The laziness of these individuals is want of capacity. In order to avoid work they become tramps,

punishment makes them still more obstinate, and the number of so-called incorrigibles in prisons includes many feeble-minded individuals. In reformatories, where they are properly treated, they may often become, in a measure, useful individuals. But even here their vanity, which often tells them that they accomplish a great deal, may be a great obstacle to their education and to the attempt to make them amenable to the regulations of the institution.

These forms of imbecility, whether manifested mainly in the moral or the purely intellectual field, do not show a steady advance when the period of bodily development has passed. We have already seen, however, that a certain periodical course of the symptoms is recognized when there is an hereditary neurasthenic basis. Moreover, external accidental factors, such as an injury to the head or a severe bodily disease, may cause a long-continued increase of all the symptoms, which may disappear after the removal of the exciting cause. There is then apparent recovery if the original feeble-mindedness has not been marked or has been overlooked. A similar condition may be observed at the period of puberty. Such exacerbations of an originally slight imbecility may disappear entirely, even after the lapse of a year.

In the higher grades of imbecility the accompanying anatomical changes can no longer be disregarded. We must then employ the term idiocy, and this cannot be separated from those inhibitions of mental development which are accompanied by distinct anatomical aberrations. We have to deal now with disorders of mental and bodily development which exist from birth or early childhood. The individuals in question remain backward and cannot attain the culture and education corresponding to their age and condition in life. Deaf-mutism will not be considered, and, in fact, those developmental disorders which depend on sensory deficiencies (especially blindness) are not really the objects of psychiatric investigation.

The imperfect development of the brain, upon which idiocy depends, may be indicated in the ovum and become

manifest during fœtal life, but the disease which leads to idiocy usually begins after birth, during the first five years of life. Hence, the term idiocy includes inhibitions of development, together with conditions which are acquired in early life as the result of morbid changes and destructions of important parts of the brain, because positive signs for the differentiation of these modes of development are wanting. The most varied anatomical changes are found in idiocy. Thus, the brain may be remarkably small or remarkably large, although the latter condition is rare. The structure of the brain may then appear to be well developed and the body may also appear to be vigorous. An explanation of the association of this condition with idiocy is impossible, because even the microscope usually shows no change.

Much more frequent and important is the small size of the brain, combined with that of the skull. The latter is not always the cause of the former, because premature ossification of the sutures is not found even in the majority of all cases of microcephalus. In some cases certain, but not all, children of the same mother, who belongs to a family which is undoubtedly free of hereditary taint, are microcephalic, and it is then assumed that the cause is an inhibition of the growth of the skull and brain due to mechanical conditions, for example, to some obstruction due to the membranes, but not to the uterus itself, because in the latter event all the children would be microcephalic. The special form of microcephaly in cretinism alone appears to be due positively to premature ossification of the sutures at the base of the skull.

For the present we will consider only simple microcephalus, which gives rise to idiocy. As a rule, the face is well developed, but the jaws are sometimes very prominent; the cranium and brain are extremely small, the forehead flat. Although the convolutions are usually simplified, the principal fissures generally are more or less well developed; the convolutions are very rarely entirely normal. Other changes are inequality of the two sides of the

brain, unusual prominence of certain fissures, internal hydrocephalus, and porencephaly. In some microcephalics the brain is even much smaller than we would expect from the size of the skull, when the space within the skull is farther restricted by hydrocephalus or pronounced thickening of the bones.

Partial atrophy of the brain is frequent, but the clinical course of such cases is not materially different from that observed when the atrophy is general. As a general thing the frontal lobes are more profoundly affected, but in other cases the occipital lobes are chiefly involved. There may also be small sclerotic foci in the most remote parts of the brain of idiots. A difference in the clinical history develops, however, according as the inhibition of development affects the cortex at the convexity or those parts of the brain which are situated at the base. In the former event the idiocy is pronounced, but the possibility of the free development of the brain at the base, where the motor tracts are found, is shown by the fact that the patients are very active and are capable of co-ordinated movements. When the base of the skull is shortened and the development of the basal parts is inhibited, the patients are slow and incapable of performing delicate movements. This group includes cretins proper.

Cretinism occupies a special position in idiocy because certain bodily symptoms constantly accompany it and because it sometimes appears endemically. Cretins are usually dwarfs. Although the head is diminished in size, it is relatively large, because the trunk is small, often child-like in appearance. The features are old and ugly, at the same time childish. Thick lips, heavy lids, deep eyes and a broad nose, thickened integument of the face and great enlargement of the thyroid gland complete the peculiar picture. As an endemic, cretinism is always accompanied by goitre and occurs only in high mountain ranges and their spurs. Thus, it is found in the deep valleys of the Alps, Pyrenees, Cordilleras, Himalayas, and the high ranges of China; it is much rarer among lower mountain

ranges. Although hereditary influences are not excluded, a local, perhaps contagious, infection appears to be necessary. This view is strengthened, for example, by the fact that distinct signs of the morbid condition do not develop until several months after birth or even later, and that the children of healthy immigrants may also be attacked by cretinism. The cranial deformity may vary greatly, but the most prominent feature is the inhibited development of the base of the skull; the cretins are correspondingly indolent. The proliferation of the cartilaginous elements, which precedes ossification in the healthy, does not take place in all the other bones in cretins. This premature cessation of ossification checks longitudinal growth. Even simple idiots attain full growth only at a comparatively late period. Cretinism is rarely sporadic.

The general condition of cretins differs so little from that of other idiots that the same clinical description will serve for both. We will first touch upon a few other factors which lead to the development of idiocy or accompany it as permanent bodily disorders. Injuries to the head, inflammations of the brain and meninges in infancy may lead to a stand-still of mental development at its earliest stage, and may also be manifested by many bodily errors of development. Such signs of degeneration may be distinguished with difficulty from the signs of bodily degeneration which begin early in fœtal life and hence also accompany a congenital idiocy. These conditions include various deformities of the skull, squinting, malposition and absence of teeth; keel-shaped, narrow, and high palate; defects in the palate and iris, deformities of the genitalia, etc.

An essential feature in the clinical history of idiots of all ages is the absence of attention. This is so much more marked because accompanying feelings upon which attention must be based are extremely feeble. Hence very few concepts are formed from the sensory impressions, and the former are so superficial that they rapidly disappear. The semi-sensory concepts are not combined with

others into a real mental possession. There is an absence of firmly arranged notions which decide the impulses of the will, and there is also a lack of comprehension of mental values which lead outside of the obscure feelings and impulses of the patient's own ego. The lack of comprehension becomes more distinct the more the development of speech is inhibited, because the possibility of education depends materially upon speech. Even when speech has been acquired quite completely, its use is ordinarily confined to a few phrases and sentences. This is due to the lack of interest in surrounding circumstances. The more strongly the attention can be aroused, at least for a time, the more perfect does speech become and the more extensive are the relations to the outer world. The greater the number of senses brought into play in these relations, the better are the chances of improvement. Hence, the main principle in the education of idiots is the simultaneous stimulation of several senses (sight, hearing, feeling). This also explains the great difficulty in the education of children with defective senses.

Even when an idiot has acquired, in a measure, the ordinary branches of study, the contents of his mental life are usually confined to a few groups of ideas. In some of these cases one-sided talents are developed in an unusual degree, but often in an impulsive and semi-conscious manner, in which a mechanical sort of memory constitutes the chief element. All higher endeavors are wanting, and the mental processes are associated only with personal sensations. Joy and sorrow are based chiefly on bodily conditions, or they appear to be due directly to unknown changes in the condition of the brain. These emotional manifestations are found in the lowest forms of idiocy and consist of two kinds. On the one hand, a morose, often brutal and terrifying appearance; on the other hand, constant cheerfulness, with an expression of mildness in the laughing features and gentle eyes. The dull idiot is usually roused with difficulty from his brooding, unless an interrupted impulse becomes manifest in unexpected vio-

lent outbreaks of rage, directed not infrequently against his own person. In the mobile idiot, on the other hand, the attention is directed hither and thither, and the external restlessness is also shown by the clapping of the hands, purposeless jumping about, laughing and shouting. Their endeavors are stimulated mainly by impulses, chief among which is the need of food; in great part this forms the central point of all their mental processes. In the highest grades of idiocy all objects are put into the mouth; helpless, filthy, without any manifestations of mind, the activity of such an individual is confined to the gratification of his few impulses. The sexual sense is sometimes manifested periodically, as in rutting animals, but the frequent inhibition in the development of the genital apparatus is usually accompanied by feeble sexual desire.

The motor impulse is often restricted by motor disturbances of various kinds. These include spasms, which may be confined to the toes, one arm or leg, may appear as unilateral athetosis, or may exhibit the signs of chorea or epilepsy. The latter variety is the most frequent and greatly impairs the prognosis. As a general thing, idiocy remains at its original degree of intensity, but progressive advance is to be apprehended when it becomes associated with epilepsy.

Some idiots suffer from paralytic conditions of the limbs. Many can neither stand nor walk, in others there is difficulty of maintaining equilibrium while walking. In addition, spasmodic movements of the legs are frequent. There may also be disease of the spinal cord, shown by atrophy of individual groups of muscles and contractures of the limbs. In the more severe grades of idiocy, symptoms which indicate grave anatomical lesions are rarely absent. Even in the milder cases we find not alone a feeble posture, uncertain gait, and awkward use of the hands, but there are also various indications of spastic and paralytic affections, imperfect development, or atrophy of certain muscles or of an entire half of the body. When the body presents no physical deformity, as in the mobile,

excited variety, the constant rocking and swaying movements remind us of chorea, and show by their useless character that they are imperative movements of direct cerebral origin; or they are a sort of play, as, for example, blowing with the mouth, accompanied often by monotonous singing and murmuring tones which seem to have a sort of rhythm.

The motor disturbances also include difficulty in speaking, but this does not always show the degree of idiocy, because there may be relatively good comprehension of things heard. But the excessive use of infinitives and certain interjections shows that intellectual weakness of central origin exists as often as interference with speaking.

Distinct as the mental weakness or the entire absence of mental activity may be, the differentiation between idiocy and imbecility becomes more difficult when the bodily errors of development are less distinct. Idiots of milder grades may become, in a measure, useful members of society, inasmuch as they may learn some occupation to which they devote their entire attention; an imbecile is often lacking in the necessary endurance and desire to work. The achievements of the idiot, however, are like those of a machine: he has no power of utilizing what he has learned in an independent manner, and the standstill at a certain stage of development is complete. The boundary is usually reached at the period of puberty, if not earlier.

It is evident from the clinical similarity in the signs of feeble-mindedness after other psychoses and those of congenital or early acquired idiocy that both forms are differentiated with difficulty. It is important, however, to distinguish all these forms of feeble-mindedness, which remain stationary at a certain point, from those conditions of mental weakness which tend to progressive dementia and which we have already studied in discussing the various groups of mental diseases. The prognosis of imbecility and idiocy is entirely unfavorable as regards recovery, and improvement can only be effected by pedagogic measures. In the higher grades of idiocy the patients are sub-

ject to various injurious influences which shorten life, such as injuries, digestive disturbances, and especially pulmonary tuberculosis.

Idiots should be sent as early as possible to an idiot asylum. In older idiots and in the other forms of imbecility described in this section the treatment is merely directed against the individual symptoms. The inattentive imbecile may be led by flatteries and rewards, and his activities may be called forth by strict regulations. In an idiot of higher grade such measures are useless. On account of their timidity, imbeciles are usually controlled easily by punishment, but this should be administered when they are alone, inasmuch as the presence of others, when they are scolded or when food or other means of gratification are denied, induces them to play the part of a martyr. Hence isolation for a few hours is often the most simple method of bringing an imbecile to terms. Otherwise they must be kept under constant supervision, as they are apt to tear their clothes when angry or even to befoul themselves in order to annoy the attendants.

The description of imbecility and idiocy has shown widely divergent conditions at both ends of the entire series, but it has not revealed undoubted differences in the varieties found at the middle of the series. For this reason we regard it as impracticable to ask for a decisive difference in treatment, such as has been practised in France. It is there held that the imbecile, on account of his selfish, malicious, dangerous, and incorrigible impulses and acts, is directly antagonistic to the common interests of society, while the imperfectly developed but good-humored idiot, who is susceptible of education to a certain degree, is innocuous. Hence, the anti-social imbecile should be sent to a reformatory, the extra-social idiot to a hospital. It appears to us, however, to be too difficult to decide each case in accordance with this principle, especially as the border conditions are very numerous. Such a distinction would also possess the greatest judicial importance and would necessitate changes in the criminal law.

DESCRIPTION OF PLATE X.

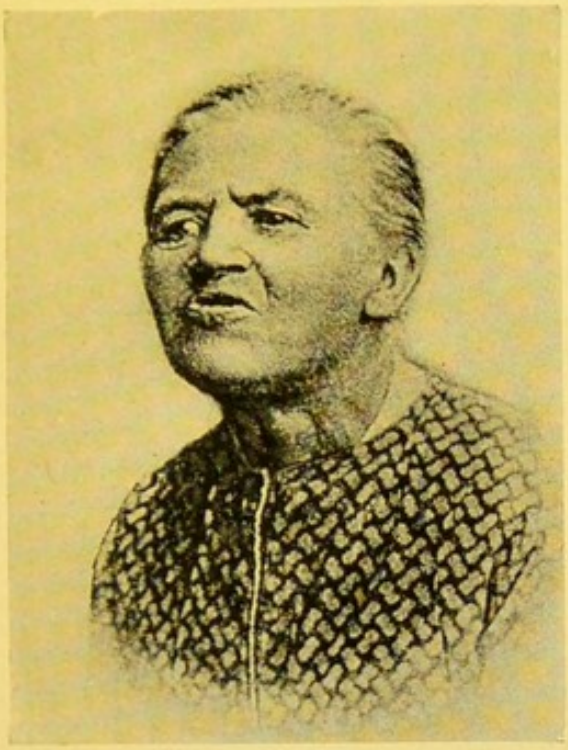
FEEBLE-MINDEDNESS.

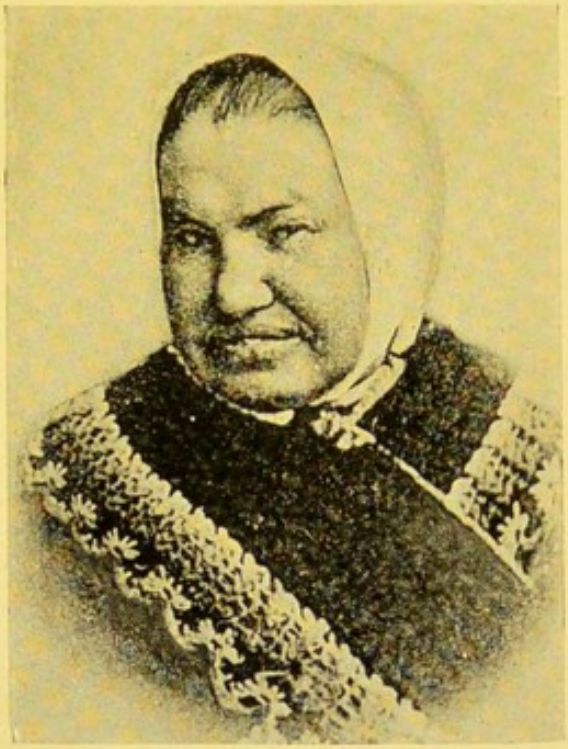
THE first picture illustrates acquired feeble-mindedness after a simple mental disorder on a normal cerebral basis. The picture of the scornfully smiling old woman hardly requires an explanation; the wrinkling of the brows is probably due, in part, to the excessively bright illumination.

The woman to the right suffers from congenital feeble-mindedness or imbecility. She entered the asylum on account of anxious excitement, but is now cheerful and content.

The picture of the young man on the left shows some signs which have been regarded as characteristic of moral insanity. It exhibits a congenital criminal. Of illegitimate birth, he early began to steal under the guidance of his mother, constantly read tales of robbery, and expatiated upon them in poetical prolix dissertations which evinced feeble-mindedness in various directions. His impudent conduct in prison finally led to a diagnosis of insanity and he was admitted to the asylum. It will not be conceded that he has "a murderer's eye," as he himself maintains; but the general impression of criminality is increased by the following characteristic signs, viz., scanty beard with thick curly hair on the head, prominent chin, short upper lip, short nose.

The young man on the right side is an idiot of moderate grade since childhood. The relative predominance of the face over the calvarium, the sunken nose, and the imbecile laugh enable us to recognize the idiot even without gross deformities of the skull and signs of degeneration.









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