TEXT-BOOK

OF

INSANITY

BASED ON CLINICAL OBSERVATIONS

FOR PRACTITIONERS AND STUDENTS
OF MEDICINE

BY

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AUTHORIZED TRANSLATION FROM THE LAST GERMAN EDITION

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WITH AN INTRODUCTION

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PREFACE.

THE present edition follows the tradition of preceding editions, in that the author's text-book is intended to be a useful guide in the difficult domain of psychiatric study and science, for the student as well as for the practitioner of medicine. For the attainment of this object, the important points that have been kept in view are: Clear, comprehensible terms; avoidance, as far as possible, of theories and hypotheses; emphasis of all that may be regarded as more or less certain in the science of psychiatry; and systematic arrangement of the scientific material.

Owing to the peculiarity of this science and its state of incompleteness, text-books on psychiatry present more or less prominently subjective features dependent upon the personality of their authors. The present text-book is based upon thirty-three years of observation of the insane, and presents disease-pictures in the light of the author's personal experience. The general correspondence between the author's experience and that of other observers may be taken as a guarantee that in general he has been correct in his observation, and that, notwithstanding the confusing variety of manifestations in "diseases of the personality," there are certain fixed laws which permit the establishment empirically of distinct disease-pictures.

The most careful account has been taken of the additions to psychiatric science since the last edition of this work.

May the book in its new form again meet with success!

THE AUTHOR.

TRANSLATOR'S PREFACE.

THE late Professor R. von Krafft-Ebing's "Psychiatry" has long deserved an English version because of its merited popularity among students of insanity. The author's clear exposition of psychology and psychopathology should make the English edition especially useful to American students; and his masterly descriptions will facilitate a practical understanding of cases of insanity presented clinically.

Our thanks are due Dr. Frederick Peterson, of New York, for his kindness in consenting to prepare the biographical introduction.

It is hoped that the author's words have been so rendered into English that his meaning is unchanged, and that the difficulties inherent in the subject have not been increased by too close adherence to the German text.

THE TRANSLATOR.

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INTRODUCTION.

THERE is perhaps no other work on psychiatry in any language which has had the vogue, the wide distribution, and the popularity of this of Krafft-Ebing. It has been pre-eminently the clinical text-book of insanity for many years among most of the Continental universities. It is still a leading German text-book, despite the advent of other works which have opened new vistas in an obscure field of general medicine. There is no better practical clinical exposition of the facts of morbid psychology, and as such this translation should be of service to the general practitioners and medical students of our own land. Those who had the pleasure to sit under Krafft-Ebing as a teacher of Gratz or Vienna will always remember the clear and concise explications of this brilliant psychiatrist.

Krafft-Ebing died December 22, 1902, at Gratz after thirty years of teaching and after a long life devoted to the zealous pursuit of knowledge and the advancement of his specialty. Among the many biographic sketches published after his death that of H. Schüle, written for the *Allgemeine Zeitschrift für Psychiatrie* for May, 1903, is especially full and sympathetic, having been written by one who was a companion and *confrère* from the very beginning of the author's career. The writer is indebted to Schüle's article for most of the data of this "Introduction."

Krafft-Ebing was born at Mannheim, August 11, 1840, and was 62 years old at the time of his death. He was the oldest of four children. His father was a man of noble nature and culture, belonging to the higher official circles; his mother a well-bred and highly educated woman, a daughter of Mittermaier, the great lawyer and propagandist of modern humane jurisprudence. Mittermaier's household at Heidelberg was one of the centers of social and intellectual life, and as a student in this university Krafft-Ebing found at his grandfather's a stimulating mental atmosphere that doubtless

had much to do with his later predilection for legal pathology. He became an assistant to Friedreich, and a summer at Zurich under Griesinger determined the choice of his special field of work.

In 1863 he went to Illenau to become the assistant of Roller and at the same time colleague of H. Schüle and Kirn. Here he became active from morning till night in an ideal atmosphere, and here prepared his graduation thesis on "Sensory Delirium." After a summer in Berlin he returned for a period of five years to his practical and scientific work at Illenau. He became a most careful and painstaking clinician. He weighed every psychic and somatic symptom, seeking the inner connections in the evolution of mental disorders by the minutest study of the changes in physical and mental condition and by the preparation of most complete histories of his cases. By the use of this rigid inductive method he constructed definite clinical pictures which sought to delineate each case from its individual features. He was not satisfied with a mere general diagnosis for purposes of classification. He followed in this the method of the venerable Hergt, whose thoroughness and devotion to his profession and whose inimitable pains with each individual patient were a great inspiration. The method was new then, but to-day its value is self-evident and has become general property. In those days, in the beginning of the sixties, it had to make its way slowly.

The ideas of Griesinger, Jacobi's inexhaustible work on mental disorders, Spielmann's thoughtful work on diagnoses, Jessen's brilliant and thorough articles in the Berlin encyclopedia, and the works of Pinel and Esquirol, these together formed the foundation of the structure upon which Krafft-Ebing and his fellow-students began their own work, while at the same time Wundt's lectures on the soul of man and animals, Fechner's psychophysics, the discovery of vascular nerves, and Morel's theory of heredity were an additional source of inspiration. If the vasomotor system may be called a system of psychic nerves whose participation cannot be separated from the genesis of morbid emotional states, since they are a psychologic postulate on account of their influence on the central circulation, the thought seemed to be justified that the physical foundation for many of the affective psychoses lay in disorders of the vasomotor system. On the other hand, the creative mind of Morel, in his theory of heredity, emphasized the importance of simple disposition and degeneration, thus connecting etiologically the facts of individual endowments and differences with definite peculiarities and modifications in the evolution of psychic disorders, and delineating certain aberrant types of course and outcome among

the so-called hereditary psychoses. "Normal being" and "superior and inferior beings" became at the time common phrases, serving as categories under which all new cases were ranged.

Krafft-Ebing was indefatigable in his work. He never spared himself. Whenever possible he made most careful pedigrees of all his cases. Every detail in the symptom-complex, every peculiarity in the course of a mental disorder, was again and again studied in the light of the principles of natural science, in order to make critical comparisons of results, to extend the principles derived, and to test them over and over in relation to diversities and exceptions. It may be well stated that the anthropologic clinical point of view in pathogenesis introduced by Morel was taken up by Krafft-Ebing, greatly elaborated, and made by him the general property of our science. In this manner the psychoses came to be grouped as vasomotor cerebral neuroses, psychoses founded on defective development of the brain or on the invalid brain, and psychoses associated with organic brain disease. His exceedingly conscientious histories led to an excellent system of clinical symptomatology in which the symptoms gained a diagnostic and prognostic value. In his personal relations with his patients he exhibited the gift of keen sympathy and the most kindly interest. He would spend entire afternoons in the garden with restless patients to show how much easier it was to do without restraint, he would play the piano for their entertainment, and in many other ways show evidence of personal care and interest.

During his stay at Illenau he wrote a number of monographs, among them being one on psychic disorders after trauma to the head, and others on transitory mania, melancholia, transitory disorders of self-consciousness, and the recognition of doubtful mental states. In this last he demonstrated for the first time the clinical features of "imperative concepts."

In 1869 he was for a time a neurologist in Baden, and then entered the army, serving in his professional capacity during the Franco-German war. Shortly after this he was offered and accepted the position of Professor of Psychiatry in the new German University of Strassburg, holding this post till 1873, when he was called to Gratz to become director of the new hospital for the insane there and teacher in the medical school. In 1875 the first edition of his "Forensic Psychiatry" appeared, a book which accomplished in its field what Griesinger has carried out in the purely clinical domain. He looked upon crime as an act of will; but, in the place of a deduction from an abstract idea of guilt, he attempted to explain inductively how the deed is the result of a condition in the

criminal which it should be the task of the physician to establish. In 1879 he published the first edition of this "Text-book of Psychiatry," and edition followed edition. It was translated into many foreign languages.

During his stay in Gratz our author began to interest himself in hypnotism and he sketched out that volume on "Psychopathia Sexualis" which brought him both recognition and much criticism. He also demonstrated dream states in neurasthenia; and a great many articles on hysteria, epilepsy, and other similar subjects gave evidence of his activity in the field of neuropathology.

In the beginning of the eighties he retired from the directorship of the asylum at Gratz, devoting himself to his professorship and a clinic on nervous diseases with twenty-four beds. Besides this he founded a sanitarium near Gratz presided over by two able pupils.

In 1889 he was called to Vienna, and three years later succeeded Meynert in the most important professorship of psychiatry at the time in the world. This became the golden period of his life. Honors and recognitions were showered upon him, not only in his own country, but by many professional bodies and associations abroad.

FREDERICK PETERSON.

BOOK I.

Introduction to the Study of Psychiatry.

PART FIRST.

The Subject and Aids in its Study.

CHAPTER I.

General Idea and Nature of Mental Disease.

CLINICAL psychiatry is an empirical science forming a part of nervous pathology. Its subject is the conditions and phenomena which attend deviations of the mental functions from the normal standard, and the study of the means by which a return of the disturbed functions to their normal state may be induced. These diseases of the brain, with predominating disturbances of the mental functions, are called diseases of the mind, or mental diseases. The controversy concerning the existence of the soul is absolutely foreign to the psychiatry of to-day regarded as a natural science founded on empirical methods of study. For psychiatry the word *soul* stands only as an expression for the totality of mental functions as manifested during the time of individual existence. The relation that exists between the individual and the soul (or mind) before it has been functionally manifested, and the question whether the soul lives on after the extinction of the life of the body, psychiatry relegates to metaphysics and theology.

Better than the expression "diseases of the mind" as a designation for the subject of psychiatry is the term "insanity," which, while assuming nothing, is yet strongly objective.

The scientific idea of the mind as a functional phenomenon of individual existence necessarily leads to the question of what place in the body has for its function the manifestation of psychic activity—to the question of the *organ of the mind.*

CHAPTER II.

The Organ of the Psychic Functions. Anatomic Preliminaries.

SCIENTIFIC inquiry has determined the cortex of the cerebrum as the organ of the psychic activities, without prejudice to the remaining parts of the central nervous system and the peripheral nerves as the subordinate mechanisms and paths for the origin and distribution of the psychic activities.

Justification for the idea that the cerebral cortex, in the narrower sense, is the place of origin of mental functions is found by science in an abundance of facts of descriptive and microscopic anatomy of the human brain; in comparative anatomy and pathology; and more than all, in the more recent investigations in physiology, which prove the cerebral cortex to be the exclusive locality in which perceptions occur and impulses to voluntary movements originate. "Memory-pictures" likewise are there stored away as *residua* of earlier sensations, perceptions, and voluntary movements. Since, however, all mental action has its origin in sense-perception, and is inevitably joined to it, the workshop of thought (perception, as the blending of a new sense-impression with the memory-picture of an earlier one; of memory, as the reproduction of memory-pictures; of intelligence, as the associative valuation of disparate memory-pictures) can only be the cerebral cortex. That the cerebral hemispheres are the organs within which the psychic activities arise has long been taught by comparative anatomy in that it proves that the relative size of the cerebral hemispheres and the basal ganglia (corpora quadrigemina) rises in favor of the former just in proportion as the psychic endowments of the various species become more elaborate.

Johannes Müller proved this by means of comparative anatomy. Thus, in frogs, for example, the corpora quadrigemina form the largest part of the cerebrum, and far exceed in mass the hemispheres, which scarcely reach backward to the ganglia.

In the turtle the more highly developed hemispheres attain the corpora quadrigemina; in chickens they reach backward to the cerebellum and partly cover the corpora quadrigemina; in the dog the corpora are relatively small and are completely covered by the hemispheres.

An interesting confirmation of this fact is the discovery by Meynert that the proportional mass of the crusta and tegmentum of the crura cerebri in the animal series upward to man corresponds with the relative development which the hemispheres and mesocephalon bear

to each other. He ascertained that, just in proportion as the hemispheres increase in size, the transverse section of the crus (direct path to the forebrain and path for voluntary movements) increases; and that the transverse section of the tegmentum (direct path to the mesocephalon) lessens in size proportionally with the decrease in size of the corpora quadrigemina and optic thalami.

These facts of comparative anatomy justify the conclusion that the development of one part of the brain stands in relation to the physiologic significance of that part in the particular species.

The great size of the olfactory lobes in certain animals distinguished for acuteness of the sense of smell in comparison with their small size in man, in whose mental life the olfactory sense plays a subordinate rôle, serves as a confirmation of this presumption.

In the comparative study of the cerebral hemispheres of the various classes of mammalia we learn that the great development of them takes place especially in the forebrain; and, further, that the convolutions lying about the fissure of Sylvius, which both physiology and pathology show distinctly to be the center of speech, undergo a peculiarly perfect development in man.

Therefore the forebrain is considered by the most distinguished investigators (Meynert and others) to be the essential organ of the psychic functions (consciousness, will).

Moreover, the important significance of the forebrain for the intellect is shown, among other things, by the proportional increase of its mass the higher the race or the individual stands mentally, and also by Meynert's weighings of the brains of the insane, according to which the forebrain suffers the greater loss.

The surface of the brain appears folded and furrowed, and comparison of the external surface of the human brain with that of the brains of the various mammalia shows that, together with a progressive development of the mass of the forebrain, a constantly richer folding and furrowing of its surface takes place the higher the psychic development in the various species of the animal kingdom.

Thus it is possible to demonstrate a continuous series of brain organizations progressing from the simplest to the most complete types—a fact which was recognized and most successfully utilized by Gratiolet.

The lowest orders of mammalia in which convolutions first make their appearance include the insectivora, rodentia, bats, etc. The entire furrowing in these animals is limited to the formation of the Sylvian fissure. In the lepus, castor, etc., there is also a longitudinal sulcus running parallel with the fissure between the two hemispheres.

In the fox, dog, and wolf three arched sulci, placed around the Sylvian fissure, appear on each hemisphere, and thus form four convolutions.

Since the furrowing of the brain of the human fetus appears first in this form, and since these convolutions form the basis of the system of convolutions of all the higher classes of animals, they have been called the primitive convolutions. From the elephant upward the brain assumes a higher type, in that a great fissure, arising in the parietal region next to the longitudinal fissure, and running thence to the Sylvian fissure, makes its appearance, and thus intersects obliquely all the primitive convolutions running from the frontal to the temporal region: *i.e.*, those convolutions that lie around the Sylvian fissure. This is the fissure of Rolando. By it the cerebral cortex is given two new convolutions—the anterior and posterior central convolutions. In the brains of the more highly developed apes two other fissures appear: the occipital, a deep fissure running outward from the longitudinal fissure in an arch with its convexity backward, almost separating the pointed occipital lobe; and the sulcus hippocampi, which lies farther back and cuts into the occipital lobe nearer its posterior extremity.

The furrowing of the external surface of the human brain follows the same plan as that seen in the apes and higher beasts of prey, but there is, in addition, a secondary series of infoldings, differing in different individuals, starting from the primary furrows, and the frontal lobes attain a development that is not reached in the lower orders.

The significance of these furrows is shown in that they are covered with gray matter. The more richly a brain is folded and furrowed, the greater its superficial extent must be and the greater the amount of gray matter.

The presumption is at once suggested that the increase of gray matter and the parallel increase of psychic power stand in relation to each other.

This conclusion, drawn from the facts of comparative anatomy and psychology, also finds support in the facts of anthropology and human psychology, for, the higher a race stands in the scale of development, the more complete and rich the cerebral convolutions are in its representatives. Too, in individuals of the same race this relation of mass of cortex and intellect holds good, for greater mental endowment is accompanied by a corresponding richness of secondary and tertiary convolutions, especially in the forebrain. Embryology shows also that the differentiation of the furrows and convolutions of the

cerebral cortex of the newborn is very incomplete, that it progresses correspondingly with the progressive development of intelligence, and is only completed at about the twenty-first year of life.

The significance of the convolutions is further shown by the brains of certain idiots, in which the great poverty of cerebral convolutions—an arrest of their growth at almost a fetal stage of development—is regarded as the substratum of the mental deficiency.

The structure of the cerebral cortex is exceedingly complex. According to Meynert's estimate, from five hundred million to eight hundred million ganglion-cells are here imbedded in a connective-tissue stroma extremely rich in blood. Probably these millions of cells are interconnected. Certainly there are regions of functionally related cell-groups forming complete convolutional systems of the cortex, connected with one another by arching fibers which run from convolution to convolution (fibræ arcuatæ Arnoldi—Meynert's association-fibers).

Besides, systems of commissural fibers, stretching between and spreading out in the hemispheres, establish connections between the two halves of the cerebrum. It is probable that a process passes out from every cell of the cerebral cortex and becomes continuous with the axis-cylinder of a nerve-tube.

These nerve-tubes collect into fibers and bundles, which may be followed in the hardened brain by means of tearing and unraveling.

Facts disclosed by so-called secondary degeneration after localized lesions, and the beautiful experiments of Flechsig, which show that the various systems of fibers receive their sheaths at different periods of fetal and postfetal life, complete the results obtained by coarse anatomic unraveling or tearing. Also by Gudden's vivisections, causing atrophy of certain systems of fibers after destruction of certain portions of the brain, the anatomic connections and functional relations of certain portions of the cerebral cortex are demonstrated.

Owing to the great amount of work it does, the brain, and especially its cortex, requires an abundant and unobstructed supply of blood, with favorable channels for the removal of the waste-products of tissue-change.

The principal system of vessels for the supply of blood to the brain is that of the carotids. After its passage through the cavernous sinus the carotid divides into two branches. One of these, the anterior cerebral, is destined for the inferior and median surface of the frontal lobe, and divides into three branches: *(a)* for the first and second frontal convolutions; *(b)* for the gyrus fornicatus, corpus callosum, the first and second orbital convolutions, the superior extremity of the ascending frontal convolution, and the paracental lobule; and *(c)* for

the quadrate lobule. The other branch of the carotid is the middle cerebral artery. This supplies the remainder of the frontal lobe and the entire parietal lobe, dividing into four branches, named, in Duret's terminology: *(a)* anterior inferior frontal, for the third frontal convolution; *(b)* anterior parietal, for the anterior central convolution; *(c)* posterior parietal, for the posterior central convolution; and *(d)* posterior temporal, for the angular gyrus and the first temporal convolution.

The remaining parts of the cerebrum—its inferior surface, the occipital lobe, and the other temporal convolutions—are supplied with blood from the basilar artery (the vertebral domain) through the posterior cerebral artery, with three branches: *(a)* for the uncinate gyrus; *(b)* for the inferior temporal gyrus and fusiform lobule; and *(c)* for the lingual lobule, cuneus, and occipital lobe.

These three principal arteries (anterior, middle, and posterior cerebral) run from their origin at the base at first in the subarachnoid space and later in the pia mater without forming regular anastomoses with one another (Duret). They branch in the form of a bush, sending arteries to nourish the cortex from the inner surface of the pia directly into the gray matter, which, in contradistinction from the end-arteries of the base, soon after their origin form capillaries. Some of these vessels end at once in the cortex, forming a wedge-shaped network of capillaries. The vessels that do not end in the cortex penetrate about three or four centimeters into the medullary substance (medullary arteries). Each convolution has from twelve to fifteen of the latter. They anastomose but little, and not at all with the systems of end-arteries that pass upward from the basal ganglia to the cortex. Thus, by this regional division of vascular supply, relatively independent for the various parts of the brain, the occurrence of circumscribed hyperemias (*e.g.*, cortex as compared with the basal ganglia) is favored, and even the occurrence of circumscribed (functional) hyperemias (*e.g.*, in the cortex) is made possible. The cerebral cortex seems to be specially protected against fluxionary hyperemia by the greater part of the arteries of the pia emptying directly into veins, as was found by Schröder Van der Kolk and lately confirmed by Heubner (derivative plexus as distinguished from the nutritive plexus of the cortex). By this means it is possible for a vascular storm to pass through these into the pia without injury to the cortex. The return of venous blood from the brain takes place through the sinuses of the dura mater. The most important are the transverse sinus, which by way of the longitudinal sinus receives the venous blood from the cortex, and the

straight sinus, which from the great veins of Galen takes the blood coming from the internal surface of the ventricles and the inner portions of the brain in general.

Knowledge of the channels for the removal of waste-products is of great importance. Only of late (Key and Retzius, Schwalbe) has the desired clearness of knowledge with reference to the lymphatic vessels of the brain been obtained.

There can be no longer any doubt that the entire brain is penetrated through and through with lymph-spaces; that it is, so to speak, drained; and that these spaces more or less directly communicate with the lymph-spaces about the surface of the brain.

The presence of the lymphatic spaces about the ganglion-cells as well as around the vessels (perivascular or adventitial spaces between the adventitia and media) is demonstrated. The emptying of these spaces takes place through the veins and the lymph-channels running in the pia mater which empty into the deep cervical glands and the lymphatic jugular tracts. The epicerebral lymph-spaces that have been found are a subdural space on the inner surface of the dura, between this and the outer endothelial layer of the arachnoid, and the arachnoid space, between the arachnoid and pia.

The subdural space has only the significance of a capillary space; by means of the Pacchionian granulations (appendices of the venous sinuses) it communicates with the sinuses and veins of the diploë. The arachnoid space is a sac filled with lymph, provided with a meshwork formed by the junction of the arachnoid and pia by means of a loose network. Only at the base of the brain are these meshes large enough to form cysts ("cisterns"). (Key and Retzius.)

The arachnoid space communicates with the ventricles and the nerve-sheaths of the optic and acoustic nerves (thus with the perilymphatic fluid of the labyrinth). The subdural and arachnoid spaces do not directly connect with each other. However, in case of great increase of pressure the subarachnoid serum passes by filtration into the subdural space and from there to the sinuses and veins.

CHAPTER III.

Physiologic Preliminaries.

THE cerebral cortex, as mentioned in the foregoing chapter, is distinguished histologically by its great wealth of ganglion-cells. Since in every place where special functions have their seat in the central nervous system a collection of gray matter rich in ganglion-

cells is found, the gray cortex has long been the subject of investigation and speculation. Until lately the idea was entertained that the various portions of the cortex were functionally of like power and importance and capable of acting one for another.

Broca's proof of the localization of the faculty of speech in a limited portion of the cerebral cortex did not agree with this opinion as defined by Flourens, Vulpian, Schiff, and others. But morphologic differences of its structure also pointed to a regional differentiation of its functional activity.

In 1874 Betz found remarkably large ganglion-cells (giant cells) in the forebrain, and small ones, like those of the posterior horns of the cord, in the cortex of the parietal and occipital lobes, the difference being analogous with the anatomic differentiation of the cells of the anterior and posterior horns of the spinal cord, which are certainly physiologically different. Moreover, Betz's giant cells are found only very sparingly in the brains of children, and they are developed only gradually in the course of the development of the brain. Further, it is interesting to note Soltmann's discovery, that the cortical regions where these cells are found, in very young animals are insensitive to experimental excitation, and only later can be excited in their specific functions. Finally, the fact that the paths of voluntary muscle-innervation have their starting-point in the frontal lobes, and the sensory paths their termination exclusively in the occipital lobes and the neighboring regions of the parietal lobes, speaks for a functional differentiation of the cerebral cortex.

The epoch-making experimental investigations on animals of Fritsch, Hitzig, Ferrier, Munk, and others, with which numerous pathologic findings on the human brain harmonize, must be thanked for the fact that to-day we are, in a measure, acquainted with the functions of the cerebral cortex and their regional arrangement. It cannot be denied, however, that, owing to the fact that there are fundamental differences of form and function between the brains of animals and man, the results of experiments in cerebral physiology cannot be immediately applied to the pathology of the human brain, but must be taken *cum grano salis.*

Nevertheless, the results of circumscribed stimulation or destruction of the cortex in the higher animals (dog, ape), brought into comparison with cases of strictly localized lesions of the human brain, must be regarded as giving the foundation for a physiology of the cerebral cortex. The investigations of Munk are remarkable for completeness of technique and distinctness of interpretation of the experimental results, and may here be shortly summarized.

The Motor Regions of the Cortex.

As was shown by Fritsch and Hitzig, and Ferrier, stimulation (electric) of the region of the fissure of Rolando (gyrus centralis anterior and posterior, lobus paracentralis, and the bordering portions of the præcuneus) induces movements of certain groups of muscles. Thus, stimulation of the lower third of the central convolutions causes contraction of the muscles of the region supplied by the facial and hypoglossal nerves; of the middle third, contraction of the muscles of the arm; of the upper third and median surface, contraction of the foot-muscles.

Stronger stimulation of the motor regions of the cortex causes convulsions in the corresponding groups of muscles, and even general convulsions (probably explainable from radiation of the irritation). Destruction of any of these territories causes the loss of voluntary movement in the corresponding muscular groups, while the associated and reflex movements may be retained, though then the associated movements are awkward.

In poisoning by ether, chloral, or chloroform these regions lose their sensibility to stimuli. From these facts these regions have come to be regarded as the centers of voluntary innervation, as the point of departure of the will, as the psychomotor centers. With paralysis, however, there coexists a sensory loss, the loss of consciousness of the position of the limbs involved. The same results have been repeatedly observed in cortical paralysis in man.

When it is remembered that there are no facts to prove that the cerebral cortex has other psychic function than sensibility (Meynert), perception, and reproduced impressions of earlier perception, in a wider sense, it lies near to refer the motor loss to the sensory loss, and thus explain it.

The theory of voluntary movements and the explanation of their initiation or loss are set forth by Munk as follows:—

The cause of so-called voluntary movements are motor ideas (residua, memory-pictures of earlier motor acts, according to Meynert, originally arising from the sensations of innervation involved in reflex movements arising in the subcortical centers—probably in the thalamus). The occurrence of these ideas of movement with sufficient intensity or clearness induces the corresponding (voluntary) movement, provided inhibition is not in play.

The loss of voluntary (acquired) movements after extirpation of certain portions of the cerebral cortex is explainable, according to Munk, by the loss of the corresponding sensory and motor con-

cepts (mental paralysis: *i.e.*, mental insensitiveness, "mental immobility").

In fact, the investigator mentioned offers proof that the so-called motor centers of the cortex are centers for sensation (touch, pressure, and muscle senses for the corresponding localities) and the motor and tactile concepts arising from the sensations. He further proves that extirpation of the cortical regions under consideration always leads to loss of the corresponding concepts, and extensive destruction to lasting loss of all sensations and sensory concepts (cortical paralysis, cortical immobility, and insensibility).

According to this theory, in case of loss of voluntary movement after extirpation of the so-called motor regions of the cortex, there is a loss of memory-pictures of earlier movements, and these regions are thus considered to be really sensory. The awkward performance of associated movements which may be still retained is explained by the loss of the controlling and regulating concepts of muscular and tactile sensibility.

The paths by which the voluntary innervation from the centers is conducted to the muscles run from the corresponding centers of the cortex through the medullary substance, probably having no connection with the basal ganglia; pass through the anterior two-thirds of the posterior limb of the internal capsule to the middle third of the crus; descend to the pyramids (in the pons possibly interrupted by groups of ganglion-cells); decussate with the corresponding fibers of the opposite half of the cerebrum; run almost exclusively in the lateral columns of the spinal cord; penetrate the gray substance of the anterior horn and pass outward to the muscles through the anterior nerve-roots. The paths for involuntary innervation (reflex paths) pass from the cortical regions to the optic thalami and corpora quadrigemina, traverse the tegmentum, take no part in the decussation of the pyramids, and pass on to the columns of Türck in the spinal cord, which they leave by the anterior nerve-roots.

The path for the sensory nerves of the trunk and extremities runs, after these nerves have passed to the cord through the posterior nerve-roots, in the posterior (lateral) columns and posterior horns of the spinal cord, and undergo decussation (as Brown-Séquard's unilateral lesion proves) soon after entering the cord. Higher up the sensory path lies in the funiculi gracilis and cuneatus, and then in the tegmentum (separated from the crura by the substantia nigra). From here it passes onward through the posterior third of the posterior limb of the internal capsule, joined there by the collected paths of the nerves of the higher senses and the sensory portion of the trigeminus

(*"carrefour sensitif"*), and through the medullary substance it attains the cortex of the parietal lobe.[1]

The Cortical Regions of Perception.

Munk's Visual Area.—After Panizza (1856) had reached the conclusion, after destruction of portions of the cerebral cortex, and after the discovery of secondary atrophy of the same parts following enucleation of the eyeball in dogs, that the center for visual percep-

[1] The statements in the last two paragraphs are not in accord with the results of recent studies of the anatomy of the nervous system.

The pyramidal tracts are not interrupted in the pons; the central neuron ends by communicating with the motor cells of the anterior horn of the spinal cord of the opposite side, or the corresponding motor center situated at a higher level in the brain stem.

There is no definite knowledge of "paths for involuntary innervation (reflex)" that pass downward through the basal ganglia; the column of Türck is but a part of the motor path that crosses the median line at lower levels than the pyramidal decussation.

The uncrossed motor path is made up of motor fibers that pass downward from the cortex to the cord and have the same destination as crossed fibers from the opposite hemisphere, joining these fibers after the decussation and passing downward in the cord in the lateral pyramidal tract (homologous fibers).

Unilateral lesions of the cord (Brown-Séquard) seemed to prove the immediate decussation of the centripetal sensory conducting path, soon after its entrance into the cord from the posterior spinal roots. But closer study of the actual condition present in unilateral lesions of the cord shows that the assumption of immediate crossing of the sensory fibers is not justified, and that other anatomic relations must be sought to explain the symptoms actually present.

The fibers of the sensory paths are very complicated. They are all probably made up of more than two neurons, and all undergo more or less complete decussation.

Those from the body (serving general sensibility) are probably all interrupted in the optic thalami, whence they pass, not by the *"carrefour sensitif"* (the posterior extremity of the posterior limb of the internal capsule), but interspersed with the motor fibers in the anterior portions of the posterior limb of the capsule, to terminate in the motor area of the cortex. The *"carrefour sensitif"* is probably largely made up of fibers serving the higher senses.

The lesions of the *"carrefour sensitif,"* which were assumed to cause opposite hemianesthesia, were probably misinterpreted by Charcot; for later studies have shown this symptom, when isolated, to depend upon lesion of the optic thalamus.

The central gray matter of the spinal cord is now quite generally considered the most important structure concerned in the centripetal conduction of impulses that give rise to "general sensibility."—Translator.

tion lay in the region of the posterior convolutions of the cerebrum, and after Ferrier had proved the visual center to be in the occipital lobe, Munk recognized and demonstrated this region to be the seat of visual memory-pictures, and proved that destruction of the occipital lobe near its posterior superior extremity produced (mental) blindness to impressions falling on the eye of the opposite side. The animals could see, but no memory-concept was connected with the act of vision. The animals drew no conclusion from the optic pictures presented to them, because they were unintelligible. They were transferred to their earliest period of life, since the memory-pictures which actual visual images had left behind as residua were wanting, owing to the loss of the ganglion-cell groups which preserve them or which possess the power to reproduce them. The visual image thus seemed an entirely new and unknown perception, and the creation of new memory-pictures was necessary, which, at least in dogs, when there has not been too great destruction of the cortical visual center, is possible.

The optic tracts undergo but partial decussation in the chiasm, the crossing being confined to the internal fibers. The visual path passes through the optic nerves to the corpora geniculata, and then through the medullary substance to the lateral surface of the occipital lobe. Whether fibers of the optic tract which actually pass into the external corpora geniculata as well as into the optic thalamus and corpora striata suffer interruption there, is yet uncertain.

By experimentation on animals it is shown that limited destruction of the visual region of both occipital lobes causes psychic blindness; extensive destruction of the same, cortical blindness. Unilateral lesion of the occipital regions causes functional loss (hemianopsia) on the same side of each retina; thus, with destruction of the right occipital cortex, loss of function of the right half of each retina. The same results must follow destruction of the optic path in the brain or of the right optic tract.[1]

Region of Hearing and Speech Center.—Ferrier sought and found the center of hearing in the temporal lobe. Munk demonstrated that this center has its seat in the neighborhood of the lower extremity of the temporal lobe (gyrus temporalis superioris et medius), since destruction of these parts of the cortex causes psychic deafness. Animals thus injured still hear, but they do not understand sounds.

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[1] The cortical center for sight is the cuneus; the visual center for written language is unilateral and lies, ordinarily,—in right-handed persons,—in the left angular gyrus, the *"pli courbe"* of French writers.—Translator.

Analogous results have been observed in man, where, with destruction of the point of the temporal lobe, the subjects were not deprived of the ability to hear, but they were no longer able to understand sounds. The earlier well-known language was no longer intelligible to them.[1]

The auditory path runs upward from the auditory ganglia of the medulla through the pons (?). Its fibers soon decussate, then pass into the upper part of the tegmentum to the sensory path *(carrefour sensitif)* and onward from there to the extremity of the temporal lobe.

The fibers which pass from the auditory centers in the fourth ventricle to the cerebellum are probably the auditory fibers which come from the labyrinth, and probably assist in the function of equilibrium, which is ascribed to the cerebellum.

Since the decussation of the auditory paths is complete, destruction of one auditory cortical center causes (cortical) deafness on the opposite side. The auditory center is the sensory center for speech, and its destruction before speech concepts have been developed prevents their development. Lying near the sensory center of hearing and standing in very close anatomic and functional relation with it is the region for ideas of speech movements. This motor speech center was shown by Broca to be in the third frontal convolution (in right-handed persons) of the left hemisphere. Destruction of this region causes loss of the concepts of movements necessary for the production of speech (motor and ataxic asphasia).

Centers of Taste, Smell, and General Sensibility.—As the center for the sense of taste, the path for which probably runs exclusively in the trigeminus (Gowers), Ferrier distinguishes the uncinate gyrus. Munk's investigations, at least in dogs and monkeys, speak in favor of its localizations in small areas of the base in front of the Sylvian fissure. Ferrier gives as the center of olfactory perceptions and ideas the uncinate gyrus, which, especially in animals distinguished for extraordinary development of this sense (dogs, cats), is especially well developed. Munk presumes that the cortex of the gyrus hippocampi contains the olfactory center, since anatomic connections lend color to the belief, and, in one case of a dog with loss of both falciform gyri, there was complete loss of the sense of smell.

[1] The auditory center for language lies in the superior temporal gyrus, and is, as in the case of the center for written language, unilateral (usually on the left side), and in a way independent of the general auditory center; for destruction of it does not cause deafness, but loss of power to comprehend speech.—Translator.

Zuckerkandl ("Ueber das Riechcentrum," 1887), from studies in comparative anatomy, attributes the olfactory center to Ammon's horn. Ferrier places the center for sexual concepts near the center of smell. Owing to the intimacy of functional relation in which the sexual and olfactory senses stand both in man and animals, there is much to support this assumption. The center for general sensibility (posterior lobes) is still undetermined.[1]

It cannot be doubted that the brain-cortex also influences the vasomotor, thermic, and secretory functions. Concerning the possible centers and tracts for these functions, and whether the cerebral cortex exerts its influence directly or indirectly, there are as yet nothing more than hypotheses.

The foregoing facts of modern experimental physiology make it seem certain that perception and movement are dependent upon certain definite areas of the cerebral cortex.

The residua (memory-pictures) of earlier perceptions and movements are the elements on which the development of psychic life rests.

The conditions for this development are that the memory-pictures which multiply in the various areas of perception be associated; that general concepts be formed from them which contain the characteristics of different perceptions in the same sensory sphere, as well as those of other sensory areas.

For this it is necessary that the various cortical areas be in anatomic connection (through "association-fibers," Meynert) and enter into functional relation.

There is greater possibility of this when the centers concerned are near to one another (olfactory-gustatory sense, olfactory-sexual sense, motor and sensory centers of speech, muscular sense and muscular movement).

The complicated muscular actions and perfection of movements depend on the associative and repeated use of special paths of connection (association). By far the most important element in the development of psychic life is the acquirement of speech—of the products of the thought of an infinitely long mental activity of an entire people, of a word as a sign for a condensed thought, comprehending complete series of single concepts. A further important associative union is that of tactile, sensory, and visual percepts as the foundation of a general concept of an individual body and the consciousness of a personality (ego) developed out of it. Therefrom results the limitation of the individual from the external world, of which the dimensions

[1] *Vide* note on page 11.

of space reach consciousness through the associative co-operation of the centers for the movement of the ocular muscles with the visual sphere, and the resulting development of concepts of space. It is remarkable with what ease these associative unions are established in the brains of the young, while to the brain of a mature man the acquirement of technical manipulations, the mastery of a foreign tongue, are exceedingly difficult.

The paths of association and their possibilities of combination and application are innumerable. The better the constitution of the centers and paths is, and the earlier these associative combinations and exercises take place, the more richly elaborated will be the content of the psychic life of the individual.

From these facts the conclusion is drawn that intelligence can only be conceived as the combination and result of all the concepts arising from the perceptions of the senses (Munk).

It is therefore quite as irrational to regard intellect, emotion, and will as distinct mental faculties, as to seek for their localization in anything like a phrenologic sense, since psychic existence is one and indivisible.

How physical impressions are able to produce psychic activities in the ganglion-cells of the cerebral cortex, considered as the formal elements and substrata of psychic actions, eludes the powers of experimental science. The remotest possible material foundations of psychic life are molecular movements in the ganglion-cells. The high power of activity, both in intensity and quality, of the cerebral cortex is made possible, on the one hand, by its abundant supply of blood, and the readiness of its distribution; on the other, by its abundance of fatty substances (cerebrin, lecithin, etc.) rich in carbon and hydrogen, of highly complicated chemic constitution, by virtue of which a higher value for oxidation and a remarkable capability of dissociation are attained.

These substances are apparently formed in the nerve-elements from the blood and rapidly broken up, thus liberating a great amount of working power or living force. Moreover, the brain undergoes a periodic cessation of activity—*i.e.*, psychic—in sleep.

Pflüger and Wundt have advanced some very interesting theories concerning the transformation of physico-chemic action into psychic working force in the ganglion-cells.

CHAPTER IV.

Psychologic Preliminaries.

ALL psychic life consists of concepts and their action and reaction on one another. All the functional manifestations of mental life, elementary and complicated, find their common association in self-consciousness (ego). Consciousness is made up of all the concepts present in the knowing ego during a unit of time. All that is not immediately present in consciousness is latent virtual concept. All concepts arise primarily from sense-impression, and owe to them their repeated re-excitation. Sensations are elementary concepts. They possess intensity and quality. The former is dependent on the irritability of the feeling organism (measured by the exact minimum of irritation that can be felt—threshold of irritability); the irritability is a variable quantity, depending on the state of excitability of the peripheral organs of sense, the sensory centers of the cerebral cortex (attention, sleep, waking state), and the simultaneous influence of other stimuli.

It varies, too, for the different spheres of sense and may be psycho-physically measured.

The quality of a sensation is dependent upon the kind and form of the movement (number and length of the motor waves) which lies at the basis of the stimulus. The various sensory mechanisms by virtue of their anatomico-physiologic arrangement respond with sensation only to waves of motion the rapidity of which lies within certain definite limits.

Out of the infinite number of single sensations, by the fusion of like and the differentiation of unlike percepts, sensory concepts are gradually formed which unite with one another, become separated from their original sensory source, and are elaborated into general concepts, ideas, judgments, and conclusions.

Fused in the consciousness of the unity of the body, they finally become a complex of concepts (ego), which distinguishes itself from the external world, and from every new-formed concept.

All (sensory) concepts pass through consciousness under the aspect of time and space.

Every concept that has once been present in consciousness may be reproduced and recognized as identical with the original concept (memory).

The reproduction is spontaneous (physiologic excitation), or it is induced directly by a sense-impression (apperception) or indirectly by the processes of association consequent on a perception.

The more frequently and clearly an original concept has been present in consciousness, and especially if emphasized by an emotion, the greater will be the facility of its reproduction. The reproduced concept may be identical with the original or altered (imagination). Imagination never creates anything absolutely new, but only a new combination of the old. Its formative activity is partly involuntary and partly affected by the will.

The reproduction of a sensory idea is accompanied by a feeble sensory excitation (sensory picture), just as ideation, constantly sustained by the senses, is thus excited to activity.

Our concrete ideas are always accompanied by certain psychic movements that are called feelings. This coloring of ideas by feelings is a fact which is ascribed to the affective faculty. The nature of the coloring (pleasure, displeasure) is dependent partly on the content of the concrete idea and its intensity and duration (stimuli in themselves pleasant cause unpleasant feelings when too strong or too long continued), partly on the nature of the idea (sensual, abstract, apperceptive, reproduced), since the ideas called up by sensual impressions (sense-perceptions, common sensations) excite feelings of special intensity in consciousness (affective faculty).

Not less important than the content of the ideas for the production of feelings are the nature and mode of the formal process of thought.

Slowed or inhibited thought (inability to comprehend or remember a fact) induces lively feeling of displeasure, and the same is true in case of failure of change of ideas (*ennui*, melancholia), while, on the other hand, facilitated conception (finding the solution of a problem, the recollection of a name that had been forgotten), rapid change of ideas (diversions, mania, etc.), induce pleasurable emotions. The resultant state represented by all the emotions at once present in consciousness constitutes the mood. It is conditioned by the content of the concrete ideas, by the nature and mode of the formal process of thought, and by the state of general feeling. A higher grade of emotional reaction to ideas which convulses consciousness is called an affect.

Its conditions lie in the suddenness of the causal ideas, their content, their peculiar significance for the innermost kernel of the personality (ego), and their duration. At the same time the susceptibility of the thinking subject to excitation (which is again conditioned by earlier impressions and the habitual tone and temperament) is important.

Emotions may be induced by reproduced ideas as well as by sense-perceptions. The ideas induced reflexly by unconscious operation of the psychic organ are of peculiar importance in pathology (irritation of peripheral organs, as in hypochondria, nutritive disturbances of the psychic organ itself, and consciousness of inhibition of its functions).

They may induce lively affects, even where the idea is not clearly defined with a concrete content.

Moreover, in the production of affects, the formal modalities of activity of the ideational process play an important rôle. The most violent affects are produced by disturbed or facilitated activity of ideas (imperative ideas).

The affect is especially violent when an idea, through its union with a strong feeling, induces impulse to act, and this state of tension does not find immediate relief in action. Then affects of anger and fury result; while, on the other hand, a sudden removal of tension (by action) induces a pleasurable affect.

We differentiate pleasant and unpleasant affects according to content.

The affects react on the circulation, muscle-tone, and the vegetative functions, and accompany changes of these functions. This holds true of the affects of the healthy as of the affective states of the insane (melancholia, mania). In the latter conditions certain precordial sensations (precordial distress and precordial sense of pleasure) and secretory (weeping) and motor phenomena (laughing, etc.) are especially worthy of attention.

An especially important form in which emotions and affects may occur is the ethic. Moral feelings (sentiments) relate exclusively to the personality, whether it be self (selfishness) or another (sympathy), and they arise from ideas which affect the innermost kernel of the personality, the aggregate of ideas forming self-consciousness. Sympathy represents a higher grade of development of selfish feelings. It consists of the transfer of our own selfish feelings to another personality, and our feeling with it. In its lower grades of development sympathy is limited in its manifestation to feeling for kin; but, as the fairest flower of mental culture, it extends to embrace all mankind. The ascendency of altruistic feeling over egotism is the object aimed at in the cultivation of the individual and the race. The highest satisfaction of selfish feeling arises from the fulfillment of this end, which is the object of all moral precepts. Upon subjective recognition of this *conscience* depends; on the objective, morality. It becomes a law when declared by mankind (society, state) to be a binding

precept, and its obedience is made a duty of the individual. The ethic feelings and affects, like affects in general, are essentially manifested in two forms: pleasurable (self-esteem, respect, sympathy in another's happiness) and painful (self-contempt, contempt, pity).

When we turn to the processes of thought we find as a common characteristic that they are arranged under certain general categories of space and time. The general idea of space results primarily from the information derived from the tactile and muscular senses; the general idea of time depends on the succession of ideas, in that they pass through consciousness, reciprocally crowding and expelling one another. The shortest time within which one idea follows another is psycho-physically measurable, and it is found to average one-eighth of a second. The one idea present in consciousness draws from the infinite number of latent ideas, lying just at the threshold of consciousness, single ones, and is extinguished by them. This process is, for the most part, involuntary, and attention and will are able only in a limited degree to modify the procession of ideas.

The procession of ideas is, however, not without laws. Our abstract thought moves in the form of judgments, which are logically connected in the form of speech (sentence). With this logical sequence of ideas there is also a mechanical sequence: the so-called association of ideas. Ideas may call each other into consciousness mechanically, thus: from the relation of the whole to a part (a portion of the body or a part of a statue calls up the completing idea of the whole body or of the whole statue); from the relation of cause and effect (hearing the report of a gun calls up the idea of a hunter); from similarity and contrast (a physiognomy which excites the comparing idea of similar faces; the idea of heaven, which associates itself, in a way, with the opposite idea of hell); associations by habit (Our Father, who art in heaven); the simultaneous occurrence of ideas or their occurrence under like circumstances (reproduction of absolutely disparate events which were of simultaneous occurrence, recollection of persons on revisiting the locality where their acquaintance was made); finally from phonetic similarity (pine, mine; taper, paper). Under physiologic conditions, in spite of all energy of the will, a concrete idea remains in consciousness but a short time, being blurred, pushed aside, and superseded by others; under pathologic conditions (hindered association of ideas) it may remain in consciousness with abnormal intensity and duration and thus induce important disturbances (imperative idea).

The motor side of mental life, corresponding with its various stages of development, offers various phenomena. The lowest form

of movement is reflex. It is found pre-established in the anatomic arrangement of the central nervous system of the newborn. This form of reflex movement takes place unconsciously. The excitants are sensory stimuli. A higher form of movement, but one standing very near to simple reflex movement, is the sensorimotor resulting from sense-impressions. It is accomplished at the threshold of consciousness. Instinctive, impulsive movement stands a degree higher. Its motive is formed by organic sensations. It represents a lower stage of consciousness. Voluntary action is a completed form of psychomotor activity. It is begun and completed within the sphere of consciousness. Its primary cause is an idea colored (accompanied) by a feeling. The more intense this feeling is, the more certain is a desire to result. The movement undertaken to satisfy a desire is an act. The thing desired is thus conceived of as attainable. Otherwise there is simply longing or wishing. An act always presupposes ideas as motives, but these may be more or less clearly defined in consciousness. An act the motive of which is not clearly present in consciousness is impulsive. Affective acts are closely related to impulsive acts. They arise unconsciously and involuntarily, but the will is able in a certain degree to repress them (training).

Conversely, the highest degree of voluntary action is that known as free will. Its conditions are complete consciousness of the willing subject of the complicated ideas of utility and morality, reflection on the various possibilities of willing or not willing which rest on those logical and moral motives, and the possibility of deciding to act in accordance with them.

For the attainment of a certain constancy in manner of action character is necessary; that is, established psychic associations fixed by experience and education, which have become so strengthened that they constitute ideational complexes and emotional and voluntary impulses. In the child these conditions are not present, and they are often destroyed or at least injured by mental disease.

CHAPTER V.

The Special Place of Mental Disease in the General Domain of Cerebral Disease.

From all that has gone before, there can be no doubt that the disturbances of psychic functions as they occur in insanity are the expression of changes in the organ that, under normal conditions, makes possible the occurrence of the psychic processes. Thus, the

psychic disease proves the existence of a disease of the cerebral cortex; and, since circumscribed cortical disease (focal lesions) can occasion only symptoms of defect referable to the diseased portion of the cortex, the psychic abnormality can only be conditioned by a diffuse change in the cerebral cortex.

Psychic diseases are diffuse diseases of the cortex of the brain.

The results of postmortem examination of those dying insane seem at first glance to oppose this statement, since in the majority of cases macroscopic appearances of disease are wanting.

However, since the foregoing sentence is the logical conclusion from the facts of experience, one may presume that the disturbances of nutrition during life (as toxic and febrile delirium shows) of the highly sensitive cortex are so fine that with ordinary instruments they are not demonstrable postmortem.

Like many other diseases of the central nervous system without demonstrable postmortem lesions, the majority of psychic diseases seem to be for that reason functional; to be the result of molecular changes—a disturbance of nutrition.

The conception of many psychoses as being functional diseases must not, however, be given too wide an application, and thus encourage neglect of investigation of the pathologico-anatomic foundation of the psychoses. It must not be forgotten that in many forms of mental disease pathologico-anatomic lesions are found which are almost identical; that it is but a short time since it has become customary to examine the brain otherwise than with the knife and fork, to use Griesinger's excellent expression; further, that the microscopic examination of the brain that has manifested abnormality of its functions is seldom without profit; and that our knowledge of the histologic details of this most complicated of organs, and especially of the relation of the neuroglia to the actual nervous tissue, is still very defective.

We remember, too, that the causes of the clinical phenomena may consist of anomalies of innervation of the vessels and the anemia, hyperemia, edema, and change of the normal relations of pressure thus induced, which death completely removes; or finally in chemic changes, when the normal chemistry of the brain is incompletely understood and the pathologic not at all.

Experience teaches that it is almost exclusively in the primary forms, the initial stages, of insanity that we find no postmortem lesions, and we are forced to the assumption of anomalies of innervation, in the distribution of blood and chemic processes.

On the other hand, in the secondary and final stages of insanity we find, as a rule, material changes consisting in part of the residua of inflammatory and degenerative processes affecting the membranes and cortex which were clearly inaugurated by such nutritive disturbances.

To-day at least we may say that there is not a single diffuse alteration of the cortex of the cerebrum—be it a hyperemia, anemia, edema, or inflammation—which does not manifest itself clinically by a disturbance of the psychic functions. (Griesinger.)

Thus, from an anatomic standpoint, mental disease may be defined as a diffuse disease of the cerebral cortex consisting of changes

which may vary from mere alterations of cortical nutrition to gross changes of structure, especially inflammatory and degenerative in character.

In this treatise the disturbances of psychic functions which occur as symptoms of the graver disturbances of general nutrition (intoxication, fever) are not placed in the category of psychic diseases, only such mental disturbances being considered to fall within the term insanity as are the expression of spontaneous processes, arising independently in the cerebral cortex and having in general a chronic and afebrile course.

This distinction is practical, but arbitrary, and not strictly scientific, since such acute and symptomatic nutritive disturbances of the cerebral cortex also become independent, and, outlasting the primary process, develop into true psychoses. Certain it is that there are easy transitions from the deliriums of inanition, intoxication, and fever to the psychoses (delusional insanity). On the other hand, these psychoses may occasionally run their courses acutely, even very acutely. Therefore the statement—mental diseases are diffuse diseases of the cortex of independent character and generally of chronic and afebrile course—contains only a relative and conventional truth.

Clinically mental diseases (psychoses) form a part of cerebral pathology. The study of the etiology of psychic diseases teaches this unequivocally, in that the laws of origin of mental diseases are essentially the same as those of other diseases of the brain and nerves, where the biologic law of heredity, which can be conceived only as resting on an organic basis, is of the greatest importance.

Mental diseases are often inherited, and, at the same time, various cerebral and nervous diseases in the progenitors may induce a disposition to insanity in the following generation.

With this exquisite tendency to transmission these abnormal states have the peculiarity that they may reappear in the following generations in the most varied forms of neuroses, and thus etiologically the most widely differing cerebral and nervous diseases can only be regarded as members of one and the same pathologic family.

No less frequently do we see in an individual the successive transitions from simple neuroses (chorea, hysteria, epilepsy) to insanity; or we see in several members of the same family in which a predisposition is present that an exciting cause like fright (according to accidental or individual circumstances) induces epilepsy in one, insanity in another, etc.

With reference to the clinical symptomatology, the psychoses may be defined as a special class of cerebral diseases, distinguished by the predominance of disturbances of the psychic functions in the disease-

picture. But these are not the only symptoms, for, owing to the direct or indirect influence of the cerebral cortex on the sensory, sensorial, motor, vasomotor, secretory, trophic, and heat-regulating functions, there may be corresponding physical symptoms associated with those that are purely mental.

On the other hand, it is to be remembered that psychic disturbances do not occur exclusively in the so-called psychoses, but also, at least in an elementary form, in all the cerebral diseases. Focal diseases of the cortex and any cerebral disease may, owing to sympathetic or secondary anatomic effect upon the cortex, begin with general mental disturbance, which may be either temporary or lasting, though, of course, in focal diseases of the brain motor and sensory disturbances, and not mental symptoms, occupy the foreground of the disease-picture.

Thus it is evident that the separation of insanity from other diseases of the brain is artificial and arbitrary, and justifiable only on practical grounds (social importance, wealth of symptoms, imperfection of the science, peculiarity of the methods of its study).

Practically, without reference to their peculiarity, it is necessary to study and treat the psychoses as we do other diseases of the brain.

The disturbances of psychic functions are, it is true, the most prominent, but in many instances they fail to furnish the index of diagnosis or prognosis.

Therefore the method of clinical examination must not be exclusively psychologic, but cerebro-pathologic in the comprehensive sense, with special reference to the symptoms that are not properly psychic and their employment in diagnosis and prognosis. Owing to the very nature of these specially characterized diseases of the brain they raise questions that are still more far reaching. The cerebral cortex as the organ of psychic function is the indispensable substratum of that which we call psychologically "ego" and "consciousness."

A diffuse disease of the cerebral cortex must necessarily induce a change of consciousness and the psychic personality. Hence the psychosis appears not simply as a disease of the brain, but also as an abnormal alteration of the personality.

From this fact arises the necessity in medico-practical relations of psychic and individualizing treatment of the abnormal personality, and it also entails socially and legally an important change of the person's relations to law and society. Thus psychiatry assumes a place of the greatest importance to society.

One of the most weighty matters connected with it is that of State care for the ever-increasing number of insane in all lands during the last decades. The appropriate provision for these patients, their cure, and their humane care in case of incurability are the subject of earnest deliberation on the part of legislators and physicians, especially since experience teaches that closed asylums do not suffice for the care of all these patients, and many of them may be adequately provided and cared for in a less restricted way (families, colony system), the value of which technically and economically must be decided in the future.

This much is certain: closed asylums for curable and dangerous patients cannot be dispensed with.

Psychiatry is of no less importance in its medico-legal relations.

The insane are legally irresponsible, their rights of citizenship are lost during the disease, and they may become dangerous to society. Thus it may be necessary to deprive them of freedom. But at the same time, since they are unable to care for themselves and manage their own affairs, they require legal protection. From these circumstances arises a series of legislative questions, partly general and partly concrete, the scientific answers to which depend immediately upon psychiatry in the sense of legal psychopathology: questions which are of the greatest importance for order and security in the State and for the honor, life, and freedom of the patients.

Unquestionably the most difficult question in this relation is that raised concerning the mental condition of a man at the time of the commission of a crime. Indeed, many problems in this sphere still remain for solution; the dividing-line between criminality and insanity is still vague and uncertain. Nevertheless psychiatry may approach these problems with confidence if it confine itself to strictly clinical ground and avoid all phraseology and, where science does not suffice, says fearlessly "*non liquet.*"

CHAPTER VI.

Importance of the Study of Psychiatry.

In spite of its incomplete development as a science, psychiatry in connection with the other sciences has a significance by no means small, and it should be given its deserved place and attention in the schools. Inasmuch as it undertakes the investigation of the etiology of insanity, one among the worst of social evils, it forms an interesting part of hygiene, the problem of which is the prevention of disease.

Here it touches the domain of pedagogics, since not infrequently mental disease is the result of a faulty education which did not take into consideration the peculiarities of constitution and temperament. Should the science of pedagogy make a deeper study of man in his normal and pathologic relations, many of the faults and difficulties of education would disappear; and the choice of many inappropriate occupations would be obviated, and many minds saved.

In its relation to theology, psychiatry is interesting since it shows the psychopathic origin of numerous religious errors and sects; and in history[1] it shows how many of the mysterious acts of historic personages find their true explanation in psychopathic conditions.

[1] Bird, Allgemeine Zeitschrift für Psychiatrie, V, page 151 (Johanna von Castilien), page 569 (Charles VI of France); VI, page 12 (Charles IX of France); VII, pages 45, 218; VIII, pages 17, 209 (various historic persons); Dietrich, *idem*, IX, page 558 (Philip V und Ferdinand VI); Bergrath, *idem*, X,

Psychology as the science of the human mind may find important sources of knowledge in mental pathology, just as general pathology is of the greatest significance for physiology. Certainly psychiatry forms an integral part of knowledge necessary in the comprehensive education required by the zealous student of nature and the physician, and it is indispensable for his mental and moral culture—certainly a most important means to a higher philosophic view of the world. Its study bears fruit in the life of every day, since it promotes a proper understanding of mentally abnormal persons, so many of whom are found wandering about in society.

Here comes the question: Why does the general practitioner need a knowledge of insanity?

It is remarkable that in countries of the first rank in civilization, like Germany and Austro-Hungary, the State requires no knowledge of insanity of the practicing physician, but only of the legal expert. Psychiatry is not a subject of the State examination in these countries.

However, if the State does not exact a knowledge of psychiatry, the public does suppose it to be a part of the practicing physician's acquirements. It is dishonest on his part to pretend to have what he does not possess. A knowledge of psychiatry can never be obtained from books.

When a physician without training in the study of insanity undertakes the care of an insane patient, he assumes a great responsibility, and endangers the most important interests (health, life, honor, fortune) of his client.

The following reasons why the practicing physician should acquaint himself with mental diseases, even though the State does not enjoin their study, may be mentioned:—

1. Cases of insanity occur in the practice of every physician, since mental disease is very frequent (one case may be reckoned to every two hundred of the population) and in modern society is becoming more and more frequent.

To be sure, a considerable number of these cases falls into the hands of specialists (asylum physicians), through the necessity of their commitment to an asylum for the insane. But these comprise only about one-third of the whole number of the insane population, the remainder of which falls to the share of general practitioners. Just in proportion as psychiatry becomes a part of the general practitioner's knowledge it becomes possible to carry out a more perfect treatment of acute cases outside the asylum walls in privacy or in the ordinary hospitals. This course is rich in results for the physician and especially beneficial to the public.

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pages 249, 366; Winslow, "Obscure Diseases of the Brain," pages 101-106; Wiedmeister, "Der Cäsarenwahnsinn," 1875; Ribot, "Die Erblichkeit, ubersetzt von Hotzen," 1876, page 116 (the family of the Borgias, the Bourbons, Catherine de Medici, etc.).

The timely recognition of danger of mental disease and its prevention will always naturally fall to those that are not specialists. The knowledge of the nature and significance of insanity is needed, moreover, in order to prevent the graver dangers of suicide and dangerous impulsive acts of the alienated person against the lives and property of others.

But with reference to the patients that must be sent to an asylum the general practitioner has duties to fulfill.

First, he must know at what moment the treatment by a specialist and the appliances of an asylum become necessary to the patient, just as every physician, without being a specialist in operative ophthalmology, must be able to recognize glaucoma, for example, and whether and at what time the patient needs the aid of a specialist. But in case of necessity, the physician has not merely to send the insane patient to an asylum; he must testify to the existence of the disease, prove the necessity of admission to such an institution, and more than all determine the facts concerning the inception of the disease, and thus scientifically prepare the case for the specialist in insanity.

The history and pathogenesis are the foundations on which correct judgment and treatment of such cases rest. The patient is, as a rule, too much disturbed to give a correct history of his trouble, and the malady is often so far advanced that the asylum physicians would be unable to obtain the facts concerning the inception and development of the disease, without the help of the attending physician. A good preliminary history is therefore an invaluable benefit to both physician and patient. Besides, a large number of chronic cases are again discharged from the asylums, and could be cared for outside such institutions, inasmuch as they often require only temporary treatment.

When the general practitioner becomes thoroughly educated in psychiatry, the burden of the much overfilled asylums will be lightened, and home treatment, which would mean a greater amount of freedom and comfort for innumerable patients, will be possible.

2. The law courts often have to decide legal questions concerning the mental condition of persons, and require the testimony or opinion of the physician. No physician can legally escape this duty. The sad part a physician plays in court, in a case of questionable soundness of mind, when he is ignorant of psychiatry, and how his opinions must excite astonishment, can be but alluded to here. A physician that has no practical knowledge of psychiatry can only figure as an expert as a matter of form. These are the direct advantages to the general practicing physician of the study of psychiatry.

But there are also indirect advantages:—

1. The physician, otherwise practical, takes little notice of the personality of the patient, notwithstanding the fact that in severe bodily disease the person (psychic), as the subject of the disease-process, also suffers and requires attention. This important part of the healing art (medical homiletics, mental or moral treatment) naturally falls to psychiatry and its therapeutics. The training of observation for the appreciation of the mental needs of a patient and the acquisition of the art of exercising a beneficial mental effect are invaluable advantages derived from the study of the insane patient.

2. A great many of the so-called neuroses are neuropsychoses: *i.e.*, the mind is simultaneously affected. The psychic share of the symptom-complexes of hysteria, hypochondria, neurasthenia, etc., can only be recognized through

psychiatric diagnosis, and it is only with the aid afforded by a careful consideration of the necessities of moral treatment that these conditions can be successfully treated.

3. Many febrile and chronic constitutional diseases, and a great many of the focal cerebral diseases, are accompanied by elementary psychic disturbances. Without a knowledge of psychiatry, it is impossible properly, practically, and scientifically to appreciate these important anomalies. To this extent psychiatry forms an important and integral part of the general pathology of the central nervous system.

CHAPTER VII.

Difficulties and the General Principles of the Study of Mental Diseases.

ETIOLOGY, as well as clinical observation, places psychiatry in the domain of cerebral pathology, and demands the same method of observation and treatment, with the abandonment of all one-sided psychologic or metaphysic theories. In spite of this inner relationship, the study of mental diseases is surrounded with peculiar difficulties.

At first sight they seem to have no analogies with the manifestations of disturbed functions of other centers of the nervous system; they seem to be processes peculiar to themselves.

The customary methods of pathologic anatomy fail us, because clinical phenomena and postmortem findings can but seldom be brought into accord; and no less do the sure and ready means of diagnostic exploration fail us—with auscultation and percussion, with pathologic chemistry, we can make not the slightest beginning in the domain of psychopathology. Here we have to deal, for the most part, with phenomena of a new order—the psychologic. From variations of degree of consciousness, disturbances of the memory; from qualitatively and quantitatively abnormal feelings, ideas, impulses, etc., we draw conclusions concerning the nature and degree of the disease of the brain.

The peculiarity of the processes of insanity is such only in appearance. If mental diseases are in reality diseases of the brain, then, notwithstanding the peculiarity of their symptoms and symptom-groups, they must all follow the general laws of the physiology and pathology of the nervous system. The laws of excitability and excitement, of exhaustion and exhaustibility, of reflex action, of vicarious action, of irradiation and conduction, of eccentric projection, of excitation, etc., all must hold good for these qualities of function.

This assumption is confirmed to the fullest extent—everywhere we meet with manifestations of facilitated and inhibited reflex excita-

bility and transference; the laws of eccentric manifestation we meet at every step of observation. No less does the general course of mental disease correspond with that of the other neuroses—temporary latency and intermission, exacerbation and remission due to cumulation of stimuli and exhaustion, periodicity in the recurrence of symptoms.

The peculiarities of the psychopathic phenomena, which are grounded in the specific physiologic pre-eminence of the organ affected, are brought much nearer to our understanding, and thus lose the impression of strangeness, if we attempt to bring them into analogy with other better known manifestations of disturbed nervous functions, and translate them, as it were, into common speech.

Thus, in a measure, we are justified in speaking of psychic hyperesthesia and anesthesia; of psychic spasm and paralysis; of lessened and increased resistance to conduction; of increased and diminished psychic reflex excitability. But there is still another important source of help offered us in the fact that insanity is a disease.

Disease is life under abnormal conditions; disease and health are not unconditional opposites. Psychopathic manifestations thus cannot be fundamentally different from those of physiologic life; they must present many analogies and transitions.

These assumptions are abundantly confirmed. The elements of which abnormal mental life is composed are the same elements that make up the state of health, only the conditions of their origin are changed.

The conditions necessary for the activity of the psychic functions in normal mental life are (with normal nutrition of the organ of psychic activity) external impressions (excitation of the senses) as well as an adequate manner of reaction of the psychic organ to the external excitation. Thus a constant correspondence between the phenomena of consciousness and external impressions is maintained. The brain of the insane patient is in an abnormal condition; the cerebral cortex is the seat of a disease-process, and because of this it is thrown into activity by inner stimuli (excitation, irritation). His psychic organ acts spontaneously, and therefore not entirely in obedience to events of the outer world and the impressions derived from these—feelings, perceptions, ideas, impulses, etc. Thus the patient in his inner world is out of harmony with the outer world *(alienatio mentis);* but the content of these abnormal psychic processes excited from within is essentially congruent with that induced by external excitation. It is not the quality, but the manner of origin, of this which determines its nature. The inner central spontaneous excitants are disturbances of nutrition in the cerebral cortex which act as stimuli.

This disturbance of nutrition presumes, besides, two other important anomalies in the cerebral cortex: changed relations in the reaction to stimuli coming from without (changed excitability, increased or diminished; qualitatively changed); and a disturbance of consciousness as such (aside from clouding of consciousness as a result of spontaneous subjective excitement).

However, there is danger that in this state of disturbed consciousness the same value may be given to inner subjective and outer objective stimuli (hallucination, delusion), for the law of eccentric psychic manifestation, as shown in habit and experience, acts only in relation to objective events in the outer world.

This clouding of consciousness (disturbance of judgment and of mental clearness) forms the foundation for an understanding of the phenomena of insanity.

In particular, it is the loss or inhibition of facts of earlier experience (important for the origin of delusions); the mistaking (hallucination) of central sensory excitation for that objectively induced, or a mixture of the two (illusion); or it is the erroneous interpretation of impressions by disturbed consciousness due to the assumption of causal phenomena in the external world, in accordance with the law of eccentric projection in harmony with previous psychologic experience.

Just as inexplicable as the fact that consciousness rests upon a material basis are the conditions necessary for abnormal states of consciousness in the insane. Only isolated causes of disturbance of consciousness can be identified; such as the inhibition or loss of memory-pictures (mental blindness, mental deafness); the inhibition or suspension of complete series of experiences of normal mental life which may be due to permanent loss of them (obliteration of memory), or result from inhibition consequent upon intense emotional mental states (disturbances of ideational association), or from disturbances of apperception (illusion); and, last, from the simultaneous occurrence of subjective and objective sensorial impressions (hallucinations).

CHAPTER VIII.

Analogies of Insanity.

THE psychologic activity of the organ of the mind results in the production of feelings, ideas, and voluntary impulses.

When these psychic processes arise spontaneously or as a result of inadequate external excitants, it is in general a sign of inner excita-

tion and anomalous reaction, the duration, intensity, and disproportion of which do not leave us long in doubt of its pathologic significance. Thus, this manner of origin is the first and most important clinical mark of insanity. The outward manifestations of the insane and the sane may be identical. Only when we know the source and motive of psychic processes can we readily decide whether we have before us an insane or sane person.

However, since insanity is made up of the same elements as sanity, and since the same laws of association and action hold good for both, the study of physiologic mental processes, as well as the observation of certain pathologic phenomena that we frequently meet, offer valuable analogies, with the help of which, as well as of that afforded by our experience with transitory mental conditions, we are enabled to gain a view of the pathology of mental life, and in a measure understand how the abnormal ideational associations and delusions, the erroneous feelings and impulses of actual insanity, arise.

Everyday life furnishes numerous analogies of this kind. Just as in the case of health and disease in the somatic sphere, where means of exact physical examination are at command, we cannot definitely mark off one from the other, so it is in the mental sphere; indeed, here we have every reason not to attempt to draw the line too sharply between physiologic and pathologic activity.

In the majority of cases, in the beginning of mental disease the important element of the clinical picture does not lie in the intellectual disturbance, but in the emotions—in the lack or in the insufficiency of motives for feelings, affects, and manifestations of abnormal emotional irritability. Comparison of these pathologic states of feeling with physiologic states of emotion is at once suggested.

Our usual manner of feeling, the quiet activity of our emotions, is capable of undergoing a tumultuous change. Under such circumstances we speak of affects, and we differentiate, according as the cause inhibits or enhances our mental interests, the depressive affects of surprise, shame, care, trouble, and worry from the expansive affects of pleasure, joy, and wild delight. Corresponding with these two possibilities of feeling, which lie within the limits of physiologic conditions of life, we find two pathologic states of emotion, namely: the melancholic and maniacal.

If we compare the painful affect of the normally depressed individual with that of the melancholic patient, we find externally no difference; in both we find the same facial expression of mental pain, the same painful depression. Both are controlled by the power of their painful thoughts and feelings; both are alike unable to interest themselves in anything that lies outside the circle of ideas into which they are forced, and are incapable of attending to their usual duties and occupations; both suffer from lack of sleep and loss of appetite, and intestinal peristalsis is diminished; in both,

general nutrition sinks. The essential difference between the sane individual who is painfully depressed and the melancholic lies in the fact that in the former the mental pain has an adequate motive and is the physiologic reaction to an external event, while in the latter there is no external or at least only an insufficient external motive, and thus the condition is the result of inner processes: he imagines something; as a result of disease his brain does not mirror for him pictures and ideas which correspond with reality, and his consciousness is too disturbed to allow him to recognize the counterfeits with which he is occupied.

The error of confounding normal mental depression and insane depression is committed only too frequently by the laity, who take note only of superficial resemblances between the two. This is the more possible, because not infrequently melancholia has its origin in a state of normal emotional depression; in the beginning physiologic, it gradually passes into a pathologic condition, and thus the cardinal difference between the physiologic and the spontaneous pathologic psychic manifestation is obliterated. However, the fundamental difference between the two is demonstrated by the lack of success, when, the depression being regarded as physiologic, an attempt is made to divert and entertain the depressed individual, relying upon the effect of time, the natural feeling of hope, and the removal of depressing causes.

While all these expectations are fulfilled with those physiologically depressed, the opposite is the case in a person depressed as a result of disease. Encouragement only embitters him; diversion he refuses or is even irritated by; an attempt to convince him logically that he is not ruined and that he is in no danger quiets him for the moment, but immediately thereafter he expresses a new delusion; for example, that he is a criminal. The source of his abnormal feelings and ideas is a brain disease; it is organic, and not psychologic.

Exactly the same analogies obtain in the comparison of the expansive emotional states of a healthy person with the maniacal conditions of the insane—at least, when the former have reached a certain intensity. But for the purpose of comparison we must not use highly cultured individuals, who in a way have learned to control their feelings; rather we should take the child who is yet unskilled in the government of the emotions; or the cultured individual in such a state that his emotions have become so strong and overpowering that they break through the bounds which custom has set around their expression. Let us imagine ourselves in the place of the lover who unexpectedly obtains the fulfillment of his wish; in that of one approaching certain death who unexpectedly is saved; or in the place of the miser who receives the news that he has drawn the capital prize in a lottery. For the moment these persons could not be outwardly distinguished from the maniac —they exhibit foolish shouting and dancing; overflow of wild delight, even to the extent of incoherence of thought; and with the overfilled state of consciousness it may go to the extent of disconnected speech and cries and even incoherence of ideas. In those wild with delight the storm soon passes; the influence of time soon makes itself felt; but with the maniacal the organic condition of disturbance lasts, it may be, even weeks or months; indeed, it may go on even to exhaustion.

The study of physiologic affects discloses principles and comparisons important for an understanding of the phenomena of affective

insanity; indeed, exact observation shows that there is no sharp limit between affects that are in themselves entirely physiologic and certain other affects which, though apparently the result of motive, are, owing to their intensity, duration, and the accompanying loss of self-consciousness, pathologic; such as those that are observed in certain persons of abnormal cerebral organization and in the neuroses (epilepsy, etc.).

Observation of individuals, of whom types are very numerous in both public and private life, and who show among themselves the greatest difference, demonstrate how variable the limit is between mental health and mental disease; indeed, at one extreme we may have a genius, and at the other a fool.

In such individuals we observe peculiarities in thought, feeling, and action; they react to stimuli which do not exist for or have no effect on others, and in such a way that they appear unusual and peculiar; and thus such persons often get the name of being eccentric or even foolish simply because the great majority of mankind feel and act otherwise. Likewise the association of ideas of such individuals is unusual: they bring things into strange, unusual, new, and possibly interesting relations, even in some instances pointing the way for progress. But even at the best they are not able to make these new thoughts useful. Such persons, while not insane, are still not exactly right; they stand on the threshold of insanity, and constitute a transition to it. An understanding of these problematic natures is obtained when their ancestry is studied. As a rule, they come from insane ancestry, or at least there are insane persons among their blood relations. The study of such individuals along psychiatric lines raises psychiatry far above the narrow horizon of a special science and makes it an important practical science for the mental history of mankind.

Such pseudo-geniuses are frequently met in public life; sometimes working in the harmless domain of important discoveries; making propositions for the furtherance of the general welfare, which, however, prove to be impracticable when carefully examined; sometimes in politics, in the church, or in the State. From their ranks spring inventors, busybodies, reformers, revolutionists, founders of new sects, whose plans gain for a time the popular ear, but whose work necessarily comes to naught because it is nothing more than the mental lightning of an inductive, but erroneous, reasoning which has not ripened out of civilization, even though it be the anticipated mental product of genius (Maudsley). The study of such problematic natures helps us to an understanding of a certain form of insanity (paranoia), in which likewise the one-sidedness of certain efforts and the fixedness of certain absurd ideas which have become the ruling thoughts are remarkable; and frequently enough, in the course of the life of these originally eccentric natures paranoia unnoticed actually develops.

Another interesting analogue of insanity is offered by the phenomena of dreams.

However, there is a fundamental difference between dreams and insanity, in so far as one is the manifestation of the sleeping, while the other belongs to the waking, state. It is to be remembered that our dreams are liveliest when we are in the state of half-sleep, and that the conditions of somnambulism and sleep-walking present transitions between sleeping and waking. What makes the phenomena of dreams especially instructive for our understanding of certain phenomena in insanity is the circumstance that in both conditions the production of ideas and sensory impressions arises, for the most part, from inner spontaneous excitation, in contrast with the origin of these in the normal waking state from external perception and association of ideas.

The causes of this spontaneous automatic excitation of the ideational centers in the brain are internal stimuli (changes in the blood); their results are ideas (delusions and hallucinations) that do not correspond with reality.

In both conditions the continued automatic excitement calls up completely disparate ideas, and the association of ideas, constantly disturbed and limited, is no longer the arrangement of mental pictures according to their logical content, but at most merely an association of them according to superficial similarity (which is often conditioned by nothing more than the mere similarity of the sound of words); and thus arises that confusion and incoherence which characterize dreams as well as certain conditions of insanity.

A surprising similarity between the two conditions is shown further by the fantastic distortion and exaggeration which some impressions coming from the outer world undergo when they reach the consciousness of the dreamer or the insane person.

Just as the dreamer may take the prick of a pin for the stroke of a dagger, the pressure of the bedclothes for the weight of mountains, a benumbed limb for a paralyzed member, bodily uneasiness resulting from disturbed respiration for nightmare and being buried alive; so the insane person transforms his sensations, which often are elaborated into the most astounding delusions. A further correspondence is found in the fact that in both conditions not infrequently the personality is doubled. The insane person sometimes attributes his own thoughts to another personality (demonomania), just as in dreams we often attribute opposing ideas to other persons, dispute with them, etc.

But in the insane it is peculiarly remarkable that against the evidence of the senses, against all previous experiences or actuality, they hold fast to the most absurd and physically impossible ideas which the diseased brain mirrors before them and which they cannot correct.

We meet the same thing in dreams. We go through the most absurd and contradictory experiences without doubting their reality; we are astonished at them, like the insane person, and even for the moment we think they must be a dream; just as the insane man, in the fleeting moment of his lucid interval, recognizes the specter of his brain, and attains for the moment recognition of his disease.

The cause of the phenomenon in the dreaming person lies in the temporary suspension of the processes of deduction and judgment which underlie the higher psychic activities, and the lack of control through the higher senses, which are shut off from the outer world.

In the insane, correction is impossible because of disease of the psychic organ, and because of the disturbance of consciousness by subjective impressions (hallucinations).

It is remarkable that pleasant dreams in the sane person, like joyful delusions in the insane, are much less frequent than those of an opposite character. Experience shows that pleasant dreams are most frequent at times of mental and physical exhaustion. We see the same thing in the insane, where delusions of grandeur most frequently accompany mental decay and disease-processes which lead to the destruction of the brain, and therefore their occurrence under such circumstances indicates a bad prognosis.

The similarity of certain states of consciousness in dreams and some forms of insanity is further shown by the statements of many who have recovered from mental disease, to the effect that the whole period of their sickness seems like a dream.

The process of recovery from insanity also often resembles that of awaking from a dream. Sometimes it is sudden, as if scales had fallen from the patient's eyes, and he realizes that he was delirious; but more frequently the realization of this is gradual. The creations of insane thought, like the dream-pictures of the somnambulist, are carried over into the lucid state; so that the convalescent succeeds in recognizing his disease and its products only after troublesome and painful processes of thought, after a struggle between the fantastic ideas and reality.

By far the most striking and comprehensive analogy with insanity is offered by acute alcoholic intoxication. In this condition we find exemplified all forms of insanity, from the mildest melancholic conditions, like so-called drunken misery, to the most extreme degrees of interruption of the mental functions, which could not be more complete in terminal dementia.

But even the gravest form of insanity, dementia paralytica, is often so truly copied in drunkenness that with passing observation it is only by means of the history that we are able to determine whether we have before us acute alcoholic paralysis or the incurable paralysis of the insane.

Drunkenness is really nothing more than an artificial insanity, and we find in it two fundamental psychiatric facts, namely: that, in accordance with constitutional conditions, the common cause may induce disease-pictures that are entirely different; and that the conditions of psychic paralysis as presented in the stage of senseless drunkenness and in terminal dementia consequent upon insanity are preceded by states of excitement. In the majority of cases the first effects of alcohol are manifested in slight maniacal excitement; the physical and mental activities are increased, and the flow of ideas is facilitated. The silent become talkative, the quiet, lively; an increased sense of self leads to assertiveness, brusqueness, and joyfulness; an intensified desire

for muscular movement, a true impulse to movement, expresses itself in singing, crying, laughing, dancing, and all sorts of emotional and purposeless acts. At this stage, still conscious of the laws of propriety, the forms of politeness are observed, and a certain degree of self-control is manifested. With the increasing influence of alcohol, however, just as with the maniac, esthetic ideas, as well as moral judgment, which in the normal condition are at the command of the ego and inhibit and control, disappear. Now the drunkard gives himself full rein, shows out his frailties of character, discloses his secrets *(in vino veritas)*, and rises above propriety. He becomes cynical, brutal, self-assertive, and violent. Now he has lost power to judge of his own condition; he is as far from thinking himself drunk as the insane man is from thinking himself insane, and he flies angry when told his true condition. Finally he passes into a state of mental weakness, to complete clouding of consciousness. Phantasms of the senses occur (illusions), confusion comes on, and at last a state of deep stupor, following stumbling speech, staggering gait, and uncertain movements, exactly like those of a paralytic, closes the repulsive scene.

The similarity of this artificial insanity and the actual is further shown in that sometimes, but always as a result of peculiar predisposition, drunkenness takes the form of acute delirium or transitory mania; so that now and then intoxication becomes the immediate cause of a lasting insanity.

PART SECOND.

Historic Review of the Development of Psychiatry as a Science.

THE view expressed that the brain is the organ of psychic activities and that mental disease has the same significance as cerebral disease is the result of a progressive growth of knowledge which must be accounted one of the greatest achievements of the human mind.

In telling us of this grand achievement the history of psychiatry discloses the difficulties which stood in the way, and at the same time impresses upon us the relatively meager mass of positive knowledge which is at the command of this young branch of medical science. It also brings us to a closer understanding of many of the disputed questions of the present day, and opens up views of the goal and hopes of the future.

The history of psychiatry forms one of the most interesting pages in the history of human civilization. It tells us of grossest errors; of victims of torture and witches, who were only insane persons; of the inhumanity of past centuries; of insane persons left to languish in prisons, penned up with the commonest criminals, loaded with chains,—the victims of ignorance, and abandoned to the cruelty of a jailer who had no ear or heart for the cry of suffering and plied the whip mercilessly on the backs of the unfortunate.

But it also tells of the long and hard, though victorious, struggle which science and humanity fought with error, cruelty, and superstition.

It is the story of nothing less than the destruction of ancient prejudices, which saw in the unfortunate insane only those who had lost the attributes of humanity, and had become animals, mentally dead, and abandoned by God; which regarded these unfortunate beings as persons possessed by evil powers, as outcasts and criminals. The result of this conflict was the foundation of psychiatry as a science and the care of this unfortunate class of humanity in institutions suited to carry out their humane purpose. The history of psychiatry covers only a short interval in the history of insanity.

The innumerable causes of this form of disease justify us in the assumption that in the very earliest times of man's existence mental diseases occurred, but a thick veil covers the life and suffering of those who, during the period of scientific darkness and error, were afflicted with delusion and mental disease.

CHAPTER I.

Psychiatry in Ancient Times.

THE beginning of the history of insanity is lost in the darkness of ancient ages. What we know of the occurrence of mental disease in those distant times is limited to occasional allusions in the Old Testament and in works of poetry. Thus, it is said that the spirit of the Lord chastised Saul and troubled him with an evil spirit, and that during his attacks of mental disturbance he found diversion in listening to David's playing on the harp. The book of Daniel relates of Nebuchadnezzar, King of Babylon, that he thought he was changed into an animal and despised of men; that he ate grass like an ox, and that his body lay under the dew of heaven and became wet, till his hair grew like the feathers of an eagle and his nails like bird-claws. David offers an illustration to the effect that even at this ancient time insanity was simulated, for, out of fear of the anger of King Aschisch, he simulated insanity, and thus gained his end.

The works of poets are no less rich in examples. The sly Odysseus pretended to be insane in order to escape the necessity of joining in the Trojan War; and Ajax, the hero of the Iliad, was tortured by Furies: *i.e.*, he became insane, and threw himself upon his sword. Examples of melancholia are offered by Œdipus and Orestes, who, according to the poetic ideas of that time, were pursued by Eumenides. An example of lycanthropia is the insanity of King Lykaon of Arcadia.

We may assume that, at a time when the natural sciences were at the lowest point of their development, correct appreciation of such abnormal mental conditions was, for the most part, wanting, and that usually they were ascribed to the supernatural influences of secret powers—of gods or evil demons. The treatment of such diseases, therefore, was limited to religious ceremonies, exorcism, and charms.

Those so afflicted were either honored as holy, as happens in the Orient even to this day, or given to the influence of religion, as among the old Egyptians, who had a temple dedicated to Saturn, where they sent those afflicted with melancholia.

Psychiatry remained in this condition until the time of Hippocrates (460 B.C.). With him, however, it underwent decided scientific advancement. He took these cases from the hands of the priests, who, in temples dedicated to Æsculapius, treated such patients and gave oracular consultations.

The Hippocratic theory of mental disease may be expressed in the following sentences, as a translation into the scientific language of to-day: The brain is the seat of mental activity, and, like other organs, is obnoxious to the natural causes of disease. Mental diseases arise from abnormalities of the brain.

As is well known, Hippocrates was the father of humoral pathology; according to him, the principle causes of insanity were abnormal changes of the four cardinal fluids (blood, mucus, and black and yellow bile); but the significance of predisposition did not entirely escape the genius of Hippocrates, and he also recognized acute and chronic diseases of the vegetative organs as causes of mental disturbance. Apparently Hippocrates did not separate actual insanity from the delirium of fever, but included both in the common term phrenitis. Insanity occurred suddenly and ended quickly, or continued for a long time. He also alludes to individuals who closely resembled the insane, but who were not actually insane. Among mental diseases he recognized melancholic and maniacal conditions; also states of mental weakness. Nervous diseases, especially convulsions, passed easily into insanity, and then the prognosis was unfavorable. For the most part, mental diseases were curable and seldom fatal; the treatment was somatic—that is, medical and dietetic. Still, the temperament upon which the mental disturbance was developed was never to be left out of account. In general, the melancholic, or black-bile, temperament predominated, and therefore Hippocrates used depleting measures, such as hellebore, which, among the ancients, was much in use for the treatment of the insane. Other means were bloodletting, emetics, rigorous diet, and rest.

From these indices it is clear that the great physician of antiquity was not so far from the theories of to-day. He was, at any rate, the first who clearly recognized that in these conditions the brain is the organ at fault, and that insane states are not the result of supernatural influences, but physical disturbances like other diseases. The Hippocratic theory became the dogma of succeeding generations, though some advance may still be recognized. Aretæus (60 A.D.) gives a good description of melancholia and mania, and enlarges the scope of diagnosis and prognosis, though in etiology he was not beyond his great predecessor.

Galen (160 A.D.) also held to the principle that mental disease has the same significance as brain disease. He made some advance, in that he distinguished in the insane state a primary cerebral disease and a deuteropathic condition, the result of affections of other organs, especially of the abdominal viscera. He also sharply differentiated the delirium of fever (phrenitis) from actual insanity.

A prominent figure in the domain of psychiatry is Cœlius Aurelianus, a contemporary of Trajan and Hadrian. He considered the various forms of chronic mental disease merely as fundamental

varieties of one and the same disease, and he happily emancipated himself from the Hippocratic theory of cardinal humors. He recognized only somatic and psychic causes. His method of treatment is clearer and more precise than that of all those who preceded him; and he cast aside almost entirely restraint and force as means of treatment. He emphasized the fact that mental diseases were nothing but cerebral diseases with predominating mental symptoms; and that therefore they belonged to the domain of the physician; for no philosopher had as yet been able to cure them. With Cœlius Aurelianus this early and promising advance of psychiatry among the great Greek and Roman physicians came to an end.

CHAPTER II.

Psychiatry in the Middle Ages.

THE period of decline of the ancient Roman Empire and its civilization, and the migration of the people which followed, were not favorable for the development of the science. Medicine deteriorated and led a troubled existence in cloisters, among the Arabs, and in such guild-schools as that of Salernum. As might have been expected, the retrogression was most pronounced in the branch of medicine least understood—psychiatry.

In place of empiric scientific investigation, magic, mysticism, and superstition arose. The views of the New Testament, which looked upon the insane as persons possessed of evil demons, were not favorable for the advancement of knowledge; and therefore it should be no cause for wonder that, as in earlier ages, the treatment of the insane consisted almost exclusively of exorcism, castigation, and magical and inquisitorial means—indeed, even of torture and capital punishment.

The errors of earlier centuries were again reproduced in the delusions of the unhappy insane, who, during the Middle Ages, for the most part expressed their abnormality in demonomania or possession.

The treatment of the insane fell to the priests, who, in blind fanaticism, combated the dangerous witches and devils with the stake and torture, or sought to drive out the evil spirits by violent exorcism.

Innumerable were the witch-trials, and alike innumerable were the unfortunates put to death—principally melancholics. Thus, in the principality of Trier, within a few years 6500 persons were executed as possessed and bewitched.

Maniacal persons, hardly less to be pitied, were cast into dark prisons, chained like wild beasts, and left to die in filth and misery. Only a few patients, whose delusions gave no offense to the church, found here and there rest in the cloisters and eleemosynary institutions.

Thus for centuries the fate of the insane remained the same. Though Charles the Great had forbidden the burning of witches, and the noble Wier (1515) had applied to both emperor and the people with a petition to spare the blood of the supposed witches, who were only melancholic, insane, or hysteric, yet these isolated voices were without effect upon the superstitious masses, whose prejudices were nourished by the church. Thus it happened that witch-trials continued to occur as late as the eighteenth century.

With the age of the Reformation began a better time also for medicine, but it was long before medicine emerged from the struggle with superstition, mysticism, and scholasticism; freed herself from the bonds of the church and the blind authority of the ancients; and was supported by the positive investigations of Vesalius and the unanswerable polemics of Paracelsus.

As early as the sixteenth century in the domain of psychiatry the beginnings of a clearer understanding are apparent. Wier's enlightening efforts were supported by Porta and Zachias. The writings of Prosper Alpin, Mercurialis, Bellini, and Fernelius disclose the first signs of a new scientific revision of psychiatry. Felix Plater (1537-1614) even attempted a classification of mental diseases.

The influences of Bacon and Harvey mark initial stages of advancement in the natural sciences.

In psychiatry the beginnings were puerile. For a long time it was disputed whether the insane were possessed by evil spirits, and therefore to be left to the priests, or whether they were patients to be treated by physicians. The most enlightened among the physicians were still in doubt whether the nature of insanity was to be attributed to disturbances of the Hippocratic humors. Attempts at cure were either trifling or entirely wanting; they demonstrated only to what a depth science had fallen. Just as in the earlier times attempts were made to drive out the devil, so now physicians sought to drive out delusion; and, ignorant of its origin and nature, they made use of the most ridiculous measures.

A patient who believed himself to have no head was to be cured by having a hat of lead put on his head; to an hysteric woman who believed she had a snake in her stomach, an emetic was to be given, and a lizard placed in the vomit; a patient who thought himself so cold that he believed nothing but fire could give him back his natural warmth, Zacutus Lusitanus (1571-1642) sewed up in furs, which he set on fire.

An excellent picture of the life and suffering characteristic of that time is given by Stenzel in his history of the Prussian State. It is the story of Johann Wilhelm, Duke of Julich, son of William the Rich and Maria of Austria, who both suffered the sad fate of becoming insane. The duke was mentally weak from his youth, and never capable of ruling his people. Before he became completely insane he was troubled with the groundless idea that some one wished to kill him, and therefore he spent many nights sleepless in his armor. After he had wounded many of the people of the court in an out-

break, it became necessary to confine him. On the advice of a priest and a nun, the gospel of St. John was sewed inside of his doublet, and the host was given with his food, but all in vain. Equally fruitless were the well-paid exorcisms of the monks. The advice of physicians was also obtained; but they knew of nothing with which to combat the evil, and thus the duke was left to himself, until finally relieved by death.

This was the condition of therapeutics but a few centuries ago; the majority of insane were left to themselves, without protection and rights, or even given up to persecution.

As late as the year 1573, an act of the English Parliament allowed the peasants to hunt those who were called werewolfs, because in their delusions they thought themselves wild animals, and ran about in the forest. A patient in Padua who thought himself a werewolf, and who said that the hair had grown inward, had his arms and legs cut off in order to ascertain whether this was true or not, and he bled to death in consequence.

In many places the insane were called Abraham's men. They were generally avoided; only here and there was manifested a feeling of pity, though mixed with superstitious fear, which provided them sparingly with nourishment and care. For the most part, inquisitors and exorcisors took the place of the physician of to-day.

The biographies of persons of high position which history gives us show that even wealth and position were helpless against the prejudice and ignorance of the age.

Thus it happened to the unfortunate Joanne of Castile, the mother of the Austrian imperial house, who, after the death of her husband, Philip the Beautiful, became insane, and would have sunk into filth and misery had not Cardinal Ximenes come to her rescue; and her great uncle, Emperor Rudolph II, suffered a scarcely better fate.

CHAPTER III.

The Rehabilitation of Psychiatry at the End of the Eighteenth Century.

UNTIL the middle of the eighteenth century the lot of the insane was a very sad one. Although better views of the nature of these sad conditions of disease had gradually been developed, and even though discerning physicians had an inkling of the fact that insanity was the expression of abnormal disturbances of cerebral and nervous activity, still the important fact that these diseases, when early recognized and properly treated, like many others were curable, was not yet understood.

As long as this truth was not grasped society looked upon the insane as lost members; the State saw in them a burden and danger, and only felt easy with regard to them when, prejudiced by the thought of their incurability, it had placed them behind lock and key, in the hands of jailers, as persons dangerous to society.

This was the state of things during the time of the crazy-house, of which Kaulbach has given such a striking picture.[1] But the time for a change had come. Ever louder and more insistent became the voices of physicians and philanthropists, which, from the standpoint of humanity, called attention to the fact that the insane were still human, and pointed from occasional recoveries which the power of Nature had brought about, even amid the most unfavorable circumstances of the crazy-house, to the possibility of curing the insane by improving their material surroundings; and this was emphatically demanded of the indolent administration.

The first country in which the cure of the insane as a whole was attempted was England, where, about the middle of the eighteenth century, a hospital was founded, St. Luke's, in London, though it was still very primitive; but this happened at a time when on the Continent there were no other institutions than jails, crazy-houses, and places of detention for the confinement of such unfortunates.

The success of St. Luke's Hospital led the Quakers of York soon afterward to erect there an asylum for the insane of their order, which received the name of "The Retreat." About the same period (1777) Cullen gave a stimulus to the scientific advancement of psychiatry in England, and his efforts were seconded by such physicians as Arnold, Pargeter, Haslam, and Perfect.

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[1] The beginnings of the transformation of crazy-houses from institutions for the punishment and detention of the insane into hospitals dates from 1780 in France. It seems that the impulse to this change was given by the philanthropist, John Howard, and Emperor Joseph, who at the time was sojourning in France. Christianity had no proper appreciation of the insane, since it looked upon them as persons possessed of the devil. Care of the insane was undertaken by the Turks, who long before the time of Christ had institutions for the reception of such persons. The monks of the order of the Mersi, who, on account of the ransoming of Christian prisoners, had much intercourse with the Mussulmans, became acquainted with these institutions, and in 1409 they erected in Valencia, Spain, the first asylum for the insane on the Oriental plan. Similar institutions were soon erected in Saragossa, Seville, Valladolid, and Toledo. The first Mussulman asylum was that at Fez, which, according to Leo Africanus, was erected in the seventh century. By the Spaniards the care of the insane was spread to Italy, where at Bergamo, probably in 1352, and at Florence in 1387, and certainly at Rome in 1548, asylums were erected. In the beginning of the seventeenth century the hospitals in France began to undertake the care of the insane. In 1660 the Hôtel-Dieu was set apart for them. At about that time the city of Paris took care of about 40 insane. As late as 1818 Esquirol reported to the ministry that the insane in France were worse cared for than criminals and animals. ("Rapport du service des aliénés de 1874," page 11.)

In France, in 1765, Lorry published a good descriptive work on insanity; but it was Pinel who, though at first entirely under the influence of Locke and Condillac, gave himself to the study of mental diseases. His immortal claim to distinction, however, lies in the fact that, as physician to Bicêtre, in 1792 he struck the chains from the patients, taught that they should be treated as human beings, and gave impulse to reform in the care of the insane that has extended to all civilized lands.

In Germany it was Langermann who, having been placed at the head of medical affairs in Prussia in 1810, did great service in the reform of the care of the insane; but he also did much to further the scientific advancement of psychiatry.

Among the Italians Chiarugi deserves special mention, for his text-book was held in high regard for a long time, and even before Pinel he advocated more humane treatment of the insane.

But it remained for the nineteenth century to mark the mighty advance of psychiatry and its close union with other branches of medicine.

While the initiative in reform and humanization of the care of the insane are to be ascribed exclusively to the Italians, French, and English, all civilized nations may lay equal claim to having helped on the progress of psychiatry as a science.

In France, Esquirol is a prominent figure as the investigator of important questions, especially with relation to statistics, and also as the earliest clinical teacher in France. Following him, valuable anatomic and clinical studies were made by Georget, Bayle, Calmeil, Foville, and Leuret. The first exact knowledge of paralytic dementia we owe to our French colleagues. Among the prominent French alienists of modern times may be mentioned Morel, Falret (father and son), Brierre de Boismont, and Legrand du Saulle; in the department of administration Ferrus and Parchappe have done good service.

English psychiatry has been made prominent by Cox, Willis, Ellis, and Prichard, among the older alienists; and by Bucknill, Robertson, and Maudsley of a later date; while Conolly claims the distinction of having promulgated the theory of non-restraint in the treatment of the insane.

In Holland psychiatry made progress under Schröder Van der Kolk, the famous anatomist, physiologist, and neuropathologist; in Belgium, under Guislain; in Russia under Balinsky; in Sweden under Oehrström, Kjellberg, and Sandberg. In Germany there were many obstacles to hinder the rapid development of psychiatry as a natural science, arising out of the one-sided metaphysic and psychologic direction of thought consequent upon the influence of the theories of Kant and the natural philosophy of Schilling. Working in this purely philosophico-psychologic direction of thought we find such men as Hoffbauer, Reil, and Blumroder, but, before all, Heinroth, Professor of Psychiatry in Leipzig. It will suffice to sketch the principal theories of the latter in order to give an idea of the entire school.

Heinroth regarded the soul as a free force excitable to stimuli, but endowed with the power of choice; for him the body was not something independent, but, as it were, an organ of the soul. The fundamental law of the soul is freedom; the source of its life, reason. Heinroth's etiology is of an ethico-religious nature. All human evils arise from sin; therefore mental disturbances have the same origin. The soul is responsible for its own disease. Passions and sins—that is, the fall from grace—are the causes of mental diseases. The principal elements in their treatment were psychic; that is, a pious life and absolute devotion to God and all that is good. According to Heinroth, the only prophylactic against insanity is Christian faith.

Strange to say, this mystic and pious theory of Heinroth found adherents, among whom was Beneke, who, though he did not follow the theory in its fullest sense, still found the essential element of insanity in its psychic aspect, and thus treated the psychoses from the one-sided psychic standpoint.

Another advocate of this theory is Ideler, who, unfortunately with too great dialectics and acuteness, regarded mental diseases from a purely ethic standpoint, and held them to be nothing but abnormally intensified passions. Just opposition to these errors could not long be wanting. The principal opponent in the scientific school who fought these spiritual, ethic, and psychologic theories was Nasse, the celebrated clinician of Bonn, who, through his journal for alienists founded in 1818, gave the first impulse of opposition; other opponents were Vering, Friedreich, and Amelung, who at least held fast to the view that the seat of mental disease was the brain. But it was Jacobi who in his zeal to find a somatic basis for insanity so far overshot the mark that he placed the seat of mental disease in organs outside of the skull, and regarded mental disturbances only as a symptom which might accompany any disease of the vegetative organs, and thus gave but a very subordinate value to the brain affection, which, according to his view, was secondary.

In spite of this one-sidedness, he is entitled to the credit of having smoothed the way for scientific and clinico-anatomic methods of study which brought success; of having directed attention to the very important diseases and disturbances of vegetative organs which accompany and engender insanity; and of having pointed the way to such as followed the moral, speculative, and metaphysic methods of observation.

During the last few decades great activity has been manifested in the field of psychiatric science, which up to that time had been so unfruitful and encumbered. Developing humanitarian sentiment has built institutions everywhere favorable for the observation of the insane; and the physicians of these asylums, familiar with all means of diagnosis, and schooled in the empiric method which produced the most brilliant results in the natural sciences, have everywhere been zealous to bring to the service of the new psychiatry results which pathologic anatomy, physiology, and pathology of the nervous system, anthropology, and psychophysics offered. Flemming, Jessen, and Zeller were successful workers in the field, which had now become purely medical and somatic. It was the latter who first gave currency to the theory that the various forms of insanity are only stages of one and

the same disease-process; and it was his celebrated pupil, Griesinger, whose epoch-making text-book appeared first in 1845, who first brought together into a comprehensive theory all the previous results of exact scientific investigation.

Thus psychiatry after a severe struggle gained its rightful place among the natural sciences, and freed itself from the last clinging errors of philosophy and metaphysics.

But much yet remains to be attained before psychiatry, which can yet hardly lay claim to being more than a descriptive science, can raise itself to the height of an enlightening science. Though here we seem confronted with problems that defy solution by human knowledge, yet in the short period of true scientific study to which this domain has been subjected, the results already obtained and the unprejudiced efforts of celebrated investigators among all civilized nations in the various departments of psychiatry promise fruitful progress, the most immediate and attainable results of which will be, at least scientifically, the enlargement of psychiatry to include the whole of cerebral pathology.

Along with the clinical method of investigation, which at the present time is only too little used, and which has, for its object of study, somatic and especially the cerebro-pathologic phenomena of insanity, thus becoming neuropathologic in its scope; and with the biologic and anthropologic methods of study which seek to solve the mystery of etiology and pathogenesis, it is anatomic investigation which smooths the way to an understanding of pathology and leads psychiatry to its goal.

The later anatomico-physiologic investigation has, by the discovery of the lymph-spaces, by the study of the relation of the circulation of the brain, of the paths of innervation of its vessels, thrown light upon the circulation and nutrition of this organ. Unfortunately chemistry is not yet able to explain the laws and products of tissue-change. Experimental psychology, resting upon an exact psycho-physical basis, facilitates an understanding of the psychopathology of mental life; while clinical psychiatry, resting upon the results of neuropathology in general, seeks to investigate all the cerebro-pathologic phenomena of insanity by means of exact clinical observation, aided by all the means at command. And it seeks finally, with a view to gaining a system of classification, the establishment of pictures of diseases that are empirically genuine.

Later investigations in experimental psychology and pathology concerning the relation of processes of movement, perception, secretion, temperature, and vascular innervation to certain limited areas of the cerebral cortex, are possibly of the greatest significance for the science of psychiatry. While, on the one hand, they justify the conclusion that diffuse disease of the cerebral cortex is necessary in order to induce psychoses, they at the same time make it clear how certain elementary psychic disturbances may exist as evidences of loss or irritation, though, as a whole, the psychic functions are intact; just as functional focal manifestations may co-exist (aphasia, mental blindness, iso-

lated hallucinations, etc.). Even efforts, to a certain degree justified, to locate certain psychopathic phenomena are not wanting. Thus, Wernike ("Ueber den wissenschaftlichen standpunkt in der Psychiatrie," 1880) explains dementia of the paralytic by a summation of the progressive loss of memory-pictures and motor images in the various sensory and motor centers of the shrinking cortex (symptoms of loss). The motor disturbances are explained as the loss of ideas of movements. Somewhat venturesome is the explanation of grand delusions as "a state of irritation in the area of those memory-pictures which constitute personality." We may entertain the explanation that the incoherence, confusion, lack of orientation, and reactional and emotional states which are manifested by the patient afflicted with acute delusional insanity and delirium, are referable to incongruence of memory-pictures and impressions from the external world as a result of abnormal changes in their physical substratum: *i.e.*, the ganglion-cells. In the light of the latest cortical physiology, hallucinations appear to be the result of irritative processes in the corresponding sensory centers (Wernike, Tamburini, and Westphal); and the impulse to movement in the maniac, to be the result of irritation of the motor centers of the forebrain (Wernike). Crichton Browne (*Brain*, October, 1880) even explains the predominating movement of certain groups of muscles in the maniac as a result of irritation of corresponding motor centers consequent upon regional hyperemia.

Unfortunately, the uncertain results of pathologico-anatomic inquiry do not enable us to bring the disease-pictures into relation with pathologic and anatomic findings, and thus do not allow us to replace symptomatic by pathologic and anatomic terms.

BOOK II.

General Pathology and Therapy of Insanity.

PART FIRST.

Elementary Anomalies of the Cerebral Functions in Insanity.

CLINICAL investigation of the complicated psychopathic conditions which form the subject of special pathology in the so-called forms of insanity requires, first, the study of elementary disturbances, which in their summation and interaction give rise to the special forms of mental disease. In the foreground we find psychic anomalies, which, by reason of their prominence, bring about the autonomous position of psychiatry in the domain of cerebral pathology.

The study of these elementary psychic disturbances, however, is not of value simply for the understanding of the abnormal processes in insanity, where they appear in numbers and in the guise of well-marked disease-pictures; but it is also important for the general pathology of the central nervous system, since they occur singly and temporarily in the clinical picture of other cerebral and nervous diseases which in the narrower sense are not regarded as psychic.

This is especially true of hallucinations and illusions, of disturbances in the reproduction of ideas, of their formal flow and their apperception, and of manifestations of abnormal emotional excitability. Clinical psychiatry must not, however, limit itself to the study of psychic phenomena of insanity, for in many cases the important point in diagnosis, prognosis, and pathogenesis lies not so much in these as in disturbances of motor, sensory, and vasomotor functions.

In accord with the functional significance of the brain as the central organ of psychic, sensory, sensorial, motor, vasomotor, and trophic functions, we find, as expressions of the fundamental cerebral diseases, quite as many groups of elementary disturbances which must form the subject of clinical investigation; and in addition to these

there are certain disturbances of the vegetative functions of nutrition, excretion, respiration, circulation, and body-temperature which must be taken into account, and which, mediately or immediately, are induced by disease of the psychic organ.

CHAPTER I.

Elementary Psychic Disturbances. Classification.

THE great variety of phenomena presented in normal and abnormal mental activity demands, first, a general view and classification. Division of the subject in accordance with the three fundamental directions in which psychic activity manifests itself outwardly seems the most natural, and in accordance with this we may differentiate:—

I. Phenomena of the affective side of mental life: emotional states and emotional activities.
II. Phenomena in the intellectual sphere, which, for the most part, comprehend all that falls under understanding, reason, memory, and imagination.
III. Phenomena of the psychomotor side of mental activity: impulses and the will.

Thus we speak of anomalies of feeling, thinking, and willing. This division, however, has only a didactic meaning, and thus it does not lead us into the error of the older metaphysic psychology, which in this triad saw isolated and independent spiritual powers, and thereby fell into the grossest errors (monomanias, partial insanities).

Empiric psychology recognizes mind only as a unit in which the various faculties present, in solidarity and united activity, only aspects of psychic activity which are especially prominent.

CHAPTER II.

Elementary Psychic Disturbances. Anomalies of Feeling (Emotions).

CLINICAL experience, which in the majority of cases of insanity teaches that the disturbance does not primarily arise in false judgment, delusions, and errors of the senses, but in abnormal feelings and affects, leads first, then, to a study of the anomalies of the emotions. These may be, in general, divided into abnormal alterations of the content of the emotions, and abnormalities of the formal occurrence of the emotions, especially such as are manifest in emotional impressionability.

1. Anomalies in Content. Abnormal States of Feeling.

A state of feeling appears abnormal when it occurs spontaneously: *i.e.*, when adequate external causes for its occurrence are wanting. Under such circumstances its origin is not psychologic, but organic. It is the expression of a disturbance of nutrition in the psychic organ.

Thus it is at once differentiated from those changes of feeling which are physiologic and the result of motive.

In insanity likewise this difference must be emphasized. In the insane condition there are many states of feeling which, though induced by abnormal causes, are in themselves not pathologic, but the natural reaction to these causes: thus, for example, a person suffering with delusions of persecution hears voices; therefore he concludes that he is a villain, that his life is threatened, and he is thereby depressed. The delusional maniac, the paralytic, and the delirious patient have delusions of grandeur and corresponding hallucinatory ideas, and thus experience expansive feelings and an increased sense of self. On the other hand, when such a patient does not react in this way it is pathologic, and indicates great deterioration of the mind.

These reactive, depressive, and expansive feelings in the insane, however, must not be confounded with the primarily spontaneous, motiveless, and therefore abnormal feelings of the emotional insane (melancholia, mania). The feelings manifested by sane persons are found in the insane.

Practically, states of painful and joyful feeling present themselves for consideration.

(a) A painful, depressed state of feeling (psychalgia, phrenalgia), that has arisen spontaneously and exists independently, is the fundamental phenomenon in the melancholic states of insanity. Here we have a phenomenon analogous to that which occurs in a sensory nerve as a result of disturbance of nutrition, in the form of neuralgia. Disturbance of nutrition in the cerebral cortex leads to mental pain (psychic neuralgia).

While, to the nerve affected with neuralgia, consciousness reacts simply in the form of a general feeling (pain), the result is more complicated when the organ of consciousness itself is diseased. Owing to the solidarity of psychic phenomena, other anomalies necessarily follow from the primary elementary disturbance.

Thus to the organic psychic pain are added other psychologic phenomena.

An important source of pain is found in the impress made upon the depressed consciousness by the external world. The manner in which we react to external impressions is entirely dependent upon our general state of feeling and sense of self. One and the same event has a different effect upon us whether we are depressed or exalted.

The same landscape induces in us entirely different emotions—indeed, appears to us with a different coloring—if our mood be one of joy or sorrow. This physiologic law holds good also under pathologic conditions.

To the melancholic the external world seems somber and changed—in other colors; even objects which under other conditions would give rise to pleasant impressions seem now, in the mirror of his abnormally changed sense of self, to be worthy of aversion (psychic dysesthesia).

A further source of psychic pain lies in the fact that the intellect is under the impelling influence of feelings, and only such ideas as are in harmony with the state of the emotions can be entertained in consciousness.

Owing to this law, the melancholic is unable to retain in consciousness any other than painful and depressed images and ideas. The immediate result of this is monotony of thought and consequent weariness.

Along with the melancholic depression, the formal activity of the process of thought is also hindered, and there is therefore a notable inhibition of the psychomotor aspect of the mind.

This inhibition of the will, this opposition to the expenditure of psychic force, brings about a great increase in the feeling of depression, which is further augmented by the fact that the patient feels himself overpowered by the disturbance of his psychic mechanism, and powerless to resist it.

At the height of the disease another important source of mental pain is added, in that the patient realizes that his ideas are no longer colored by the usual feelings of pleasure or pain; that he can no longer take delight in or worry about anything (psychic anesthesia). Thus, all kinds of stimuli are without effect upon him.

Since the disturbance of nutrition is general, along with the psychic neurosis, there are various sensory disturbances (neuralgias, paralgias, paresthesias, anesthesias, and a changed state of general feeling); the vegetative functions and muscular tone suffer as well. These multifarious disturbances of the general state of feeling form another and fruitful source of psychic pain in the depressed consciousness. If the latter elements of painful feeling predominate, the depression takes on hypochondriac features. The abnormal painful depression is in itself objectless. In the milder and more transitory cases of this kind it remains so, and, as a rule, is recognized by the individual as abnormal. As the disease progresses and the disturbance of consciousness increases the patient seeks to explain his depression; and, since it

is most natural for him to find the cause of it in anything (external world, earlier experiences, etc.) rather than in an affection of his central nervous system, he at last finds false motives for it (*vide* "Delusions"). In case of hypochondriac depression dependent upon the disturbance of general bodily feeling, resulting from organic anomalies, the effort to find an objective cause is made very early, for in such cases the comprehension of relations to the external world is unclouded, and then the patient develops false ideas concerning his bodily condition, and is apt to imagine that he is afflicted with organic and incurable diseases, when he is subject only to functional disturbances.

(b) A state of abnormal gaiety of feeling (amönomania, psychic hedonia—Emminghaus), analogous to which are physiologic pleasure and that induced by toxic agents (alcohol, laughing-gas, etc.), is the emotional foundation of maniacal conditions, and the opposite of melancholic depression. As a result of inner organic changes the sense of self becomes pleasurable and expansive, and the psychic organ is capable of entertaining only pleasurable emotions.

In this state this tone of feeling affects all impressions coming from the outer world as well as all sensations derived from the organism; in consciousness there are only such images and thoughts as are in harmony with the emotional state, the activity of thought is facilitated, its content is richer and more changeable, and the transformation of ideas into desires and actions is uninhibited, indeed, even facilitated.

At the same time the patient is at every moment conscious of the greater ease and rapidity with which he thinks and acts, and the amount of pleasure he derives from this condition is comparable in degree to that of the pain experienced by the melancholic patient.

2. Anomalies (Formal) in the Origin of Emotions (Abnormal Emotional Reaction).

The disturbances under this head are, in general, those related to the impressionability of the emotions—anomalies in the intensity of emotional reaction and in the quality of feeling.

(A) Anomalies of Emotional Impressionability.

With reference to the impressionability of the emotions, and their power to color percepts and memory-pictures with feelings of pleasure or pain, there are two possibilities: emotional reaction occurs with abnormal ease; the threshold of excitability to emotional stimuli lies deeper than in normal life, so that the latter are induced with great difficulty or not at all.

(a) States of Abnormally Increased Emotional Impressionability (Psychic Hyperesthesia, Emotionality). — These states are always the expression of a cerebral condition characterized by great loss of tone dependent upon interference with nutrition, bordering more or less upon exhaustion, and a manifestation of functional weakness. In its severest form this emotional weakness is shown in the fact that the slightest thought is associated with emotional reaction. This emotional reaction, however, is not necessarily deep. In contrast with the emotional reaction of the robust brain the phenomenon does not tarry long in consciousness. The short duration of the emotional process is explained in part by the rapid exhaustion for a special quality of feeling (irritable weakness), in part by the fact that the image as a cause of concrete feeling is quickly forgotten, and finally because it is crowded out by a new idea.

With continuance of this abnormal increased impressionability of the emotions the mood is constantly changing, and with each new idea a related and adequate state of feeling is induced. This irritable weakness, this emotionality, is a very prominent phenomenon in persons with weakened brains convalescing from severe sickness, like typhus or typhoid; in those hereditarily or otherwise neuropathic; in the hysteric, hypochondriac, and neurasthenic; and in certain organic brain diseases (dementia senilis, dementia apoplectica, and dementia paralytica, and lues cerebralis—in their earlier stages).

The significance of this symptom as a manifestation of lessened inhibitory activity of the most highly organized centers is shown also by the lively mimetic, motor, vasomotor, and secretory disturbances which accompany the psychic trouble. The emotional weakness is expressed clinically in the sensitiveness of these patients; in the ease with which weeping and laughing are induced, especially in the hysteric, where it may go to the extent of becoming actually convulsive. In content these emotional states are either pleasurable or painful (psychic hyperhedonia and hyperalgia—Emminghaus). In accordance with the character of ideas which give rise to the feelings in question the following may be differentiated: 1. Sensorial hyperesthesias: *(a)* percepts derived from the external world or from the body itself which are associated with painful feelings (as in the hysteric, hypochondriac, melancholic, and those sick with fever) or *(b)* with pleasurable feelings (increased pleasure in eating and drinking and feeling of euphoria in mania). 2. Esthetic hyperesthesia: *(a)* feeling of displeasure excited by the ugly in art, by ugly faces, bad conduct, uncleanliness of surroundings, etc., and *(b)* the opposite, as intensified feelings of pleasure in art, persons, and things, and conse-

quent sympathies, antipathies, and idiosyncrasies. 3. Ethic hyperesthesias: *(a)* exaggerated sympathy in the misfortune or good fortune of others, violent aversion to what is ordinary and enthusiasm for heroic acts; *(b)* with reference to the feeling of self—extraordinary emotional reaction as a result of insult or compliment, the ready occurrence of sympathy and enthusiasm as the result of adequate ideas, and increased sensibility to a sense of shame, even to the extent of prudery (certain hysteric individuals).

(b) States in which it is Difficult to Excite Emotional Reaction (Emotional Dullness).—Complete lack of emotional reaction or its diminution in the presence of adequate impressions is a frequent and important elementary symptom (psychic anesthesia). It may be either a phenomenon of inhibition or it may indicate a loss in the psychic mechanism. This difference is of great clinical and prognostic importance. An important differential sign lies in ascertaining whether the patient is conscious of his emotional loss and is painfully affected by it (anæsthesia psychica dolorosa).

The latter is generally the case in melancholics. In melancholia the psychic anesthesia is a result of inhibition. The inhibition of pleasurable feelings is the result of the abnormal and organically fixed painful depression, and at the height of the disease, at least, the feelings are also blunted to impressions which are, in themselves, painful. The reason for this lies in the marked blunting effect of the spontaneous psychic pain as a result of which external painful impressions seem too weak to bring about their normal effect. We sometimes see the same thing in states of violent physiologic depression, where, as a result of preponderance of painful impressions, a state of dullness and indifference occurs in which the sufferer—temporarily, at least,—remains unaffected by any new painful event.

The lack of ethic and religious emotional feeling in melancholia is of special importance. It is expressed in indifference toward those things which are otherwise held to be of the highest importance: religion, family, occupation, friends, and social duties. The patients are painfully depressed by this, and begin to doubt whether they are human beings, because they no longer feel as human beings feel. The want of religious support and the comfort afforded in prayer is felt to be especially painful. These inhibitory phenomena may become the substratum for later zoanthropic and demoniacal delusions.

In another class of abnormal psychic states the lack of feeling is partly inhibitory and partly a manifestation of actual loss. Emotional coloring may be wanting in all domains of thought or only in the ethic sphere.

Thus, in the maniac there is a remarkable lack of interest in the ethic relations of life and duties. It points to a lack of that moral and esthetic feeling which he once had, and it is partly explained by the falsification of consciousness by pleasurable feelings; partly by the impossibility, owing to the compelling force of the emotional state, of entertaining opposing ideas of danger, immorality, and threatened punishment, with its accompanying feeling of pain; partly by the rapidity of all psychic processes, which prevents the entertainment of an idea, and also the consideration of the significance of an event or act.

In insanity with systematized delusions (paranoia) the delusions which falsify the consciousness of the patient inhibit the perception of former interests and relations. Out of his new and abnormal ego he looks upon his healthy past as something foreign and unrelated to himself. In many patients of this kind, as a result of the concrete content of their delusions (persecutory ideas), an unfriendly relation to the external world arises, and interest in the welfare or suffering of others is greatly changed. On the other hand, within the circle of the delusion with which he is occupied the patient is full of feeling and very excitable. However, in the course of time emotional reaction, even to delusions, may disappear: a sign of a state of mental weakness, of loss in the psychic mechanism.

Much more frequently emotional dullness is observed as a symptom of actual loss in the mental sphere in psychopathic conditions. In all cases of psychic weakness it has this important diagnostic and prognostic meaning. It is only one of the signs of general dullness and insufficiency of the psychic activities. Since this loss of that which gives value to the man cannot be realized by the patient, it is not accompanied by painful feeling. This reduction of emotional excitability is the cause of the lack of interest which the majority of insane patients feel in the lot of their relatives and companions, and at the same time a reason why they are so easily diverted.

The emotional dullness of these psychic invalids presents many degrees of intensity, and, owing to the richness of the emotional life, various losses in its multifarious aspects.

Defect in the ethic domain is the most important.

It is interesting to note that it is often found as the first sign of commencing mental weakness due to grave organic diseases of the brain (dementia paralytica and dementia senilis), and it frequently precedes for a long time the occurrence of weakness of intellect and memory. Not infrequently it forms the only residuum of a psychosis that has apparently ended in recovery.

Such individuals return to their former life and may even be capable of leading their usual social existence; but, in contrast with their former selves, they have become Philistines and egotists. The welfare and suffering of their fellow-men no longer appeal to them. Even the old bonds of family and friendship are loosened and only maintained by habit. With this lack of interest in all the higher esthetic and ethic relations of civilized life they satisfy their material needs and perform their duties.

That this defect in emotional sensibility is often the first manifestation of an advancing state of mental weakness is explained by the fact that the ethic feelings (pity, honor, religious sentiment), in so far as they have their roots in the development and application of ethic ideas and concepts, are the products of the highest mental activity, calling for the finest brain organization, and therefore they are the first to suffer when the psychic organ becomes diseased.

A similar condition of abnormal lack of moral sensibility is often developed for like causes in onanists and spirit-drinkers.

It may also be congenital, for the most part as an anomaly having its foundation in hereditary degenerative factors; and it may then be called *moral idiocy*, since the brains of such unfortunates, as a result of degenerate influences affecting the embryo itself, are endowed with an inferior organization, which robs them of the capability of forming esthetic and ethic ideas and combining these into ethic concepts. In such cases Schüle ("Handbook," page 46) differentiates the graver conditions, in which moral feelings and ideas are absolutely wanting, from those in which, though such ideas are acquired, they cannot be excited because they are never accompanied by emotional coloring.

Among the subsidiary accompaniments of this ethic defect there are two which merit mention because of their practical forensic importance: namely, want of feeling of self (honor) and lack of remorse for criminal or immoral acts.

The want of esthetic feeling (esthetic anesthesia) in such states of psychic weakness explains and makes possible the indulgence in disgusting things and the practice of disgusting habits. In the sexual sphere in connection with moral anesthesia it leads to certain revolting perversions of the sexual impulse, and causes the indifference of certain patients in the satisfaction of their sexual and physical needs.

On the other hand, it is questionable whether the indifference of certain hypochondriac and hysteric patients in the satisfaction of their necessities, the indifference with which they speak of the bodily functions, is a symptom of loss of esthetic feeling or a manifestation of inhibition; for it is possible that the intensity and force of certain feelings and ideas may prevent activity of opposing concepts.

Inhibition or loss of ethic and esthetic feelings necessarily leads to egotism, and this explains the frequency of this anomaly in the insane, and why the majority of them are actually egotists.

(B) Anomalies in the Intensity of Emotional Reaction.

Abnormal intensity of emotional reaction exists when the emotion accompanying an idea reaches the intensity of an affect, while under physiologic conditions, with the same cause, the idea would be associated only with feelings. Affective states that are characterized by unusual duration and intensity, extending even to a degree which brings about loss of consciousness or complete confusion of the intellect (*vide* "Pathologic Affects"—transitory insanity), are to be regarded as especially grave signs of functional disturbance of the emotions, representing, so to speak, convulsive reaction of the psychic organ. A state of psychic hyperesthesia facilitates the occurrence of abnormally intense (emotional) reaction; but the pleasurable and depressive affects of dements, especially those that are angry, owing to their great intensity, which depends upon absence of all inhibition, show that this is not a necessary accompaniment. It is only ethic and esthetic affects that are impossible in such patients. Essentially, the intensity of emotional reaction is referable to the loss of inhibitory central influences,—psychically, to the functional weakness of the highest mental sphere; somatically, to the defective inhibition of vasomotor and motor centers implicated in the emotional process,—and in consequence the resulting organic activity becomes especially powerful.

There are individuals in whom there is habitually an abnormal emotional instability. Formerly such persons were regarded as offering examples of a peculiar form of mental disease (excandescentia furibunda or iracundia morbosa), while in reality they are only examples of an elementary affective disturbance, a pathologic mode of cerebral reaction. It is always a sign of grave disease of the brain. It indicates a brain weakened by anemia, alcoholic excesses, or severe shock (cerebral diseases, head injury); or a brain affected with a grave neurosis (hereditary taint, epilepsy, hysteria); or a brain of defective organization (idiocy). In such conditions the slightest cause leads to the explosive affect of anger, which, owing to continued reproduction of painful thoughts, is maintained at its height.

The nature of an affect is essentially dependent upon the content of the inciting idea and the simultaneous state of self-sensibility and self-feeling. If this feeling be painful and the feeling of self diminished (melancholia), then the emotional reaction or the corresponding affect can be only painful. Under such circumstances memory-pictures and sensory perceptions, derived either from the external world or from the body itself, are sufficient to induce this emotional reaction.

Moreover, ideas which physiologically excite pleasure under such circumstances are capable only of exciting painful affects. At the height of the disease every psychic process, even mere sensory perception, induces such emotional states (psychic hyperesthesia); just as a nerve, the irritability of which normally lies deep, when affected with neuralgia reacts with painful paroxysms to mechanical, thermic, and atmospheric stimuli that otherwise would be without effect. Not infrequently such states of psychic hyperesthesia are accompanied by conditions of sensorial and sometimes cutaneous hyperesthesia.

Affects are simply painful (sadness, despair), surprising (embarrassment, confusion, astonishment, and shame), or, most frequently, expectant (anxiety, fear).

In states of pleasurable sensibility and expansive feeling of self (mania) the disturbance is manifested in joyous affects, under circumstances where normally only pleasurable feelings would be manifested.

In these cases, too, at the height of the disease, phases are met in which there is a condition of true psychic hyperesthesia, in so far as every thought and even perception is associated with an affect, and the patient lives in a continued state of joyful emotion (hyperhedonia —Emminghaus; hypermetamorphosis—Neumann).

If the feeling of self is not depressed, and the idea provoking the affect is one associated with painful feelings, then the resulting affect is the so-called mixed affect of anger.

In this state of angry feeling the slightest causes—a glance, a gesture, even a kind word—may suffice to induce repeated explosions of anger in the sensitive patient.

(C) Anomalies in the Quality of Emotional Coloring.

There are abnormal states of feeling in which the concrete idea is no longer accompanied by the physiologic emotional coloring or that previously characteristic of the individual, but by another state of feeling, which, under some circumstances, may be the exact opposite of that which should normally occur (perversion of feeling, paralgia—Emminghaus—analogous to the abnormal reaction of sensory nerves).

This anomaly rests upon the assumption that notwithstanding the old saying, *"de gustibus,"* certain impressions under normal circumstances produce like emotional reaction in different individuals. Here we are dealing, not with a loss of certain normal emotional reactions, as in cases of emotional dullness, but with reactions that are in contrast with those which, in accordance with experience, are normal to the individual and to mankind in general. For this reason, perverse colorings of the emotions more readily and clearly appear abnor-

mal than do anomalies of impressionability and intensity of reaction. They are of the greatest practical importance, because they easily become associated with an impulse which may lead to acts which are injurious to the interest of the individual as well as to the interest of society.

Among the perverse reactions in the sphere of sensory feeling the idiosyncrasies of neuropathic and especially hysteric persons may be given as examples; for whom physiologically pleasant sensations (the odor of flowers, etc.) may be experienced as unpleasant, and unpleasant odors as pleasant. As an example of motor reaction we have so-called pica (cravings).

As a rule, associated with this perversion of sensation there is sensorial and psychic hyperesthesia (facilitated impressionability and abnormally intense reaction, psychically reaching the degree of violent affects, and somatically the degree of convulsions).

Pleasure in the pain of men and animals, with the consequent inclination to torture human beings and animals, to destroy and profane monuments of art and religion, is the corresponding perversion in the sphere of ethic feeling. It is frequently associated with anomalies of sexual feeling, the somatic root of ethic and social feeling.

As belonging to the same category, we may mention aversion to work and to married life; pleasure in crime and immorality, and in the destruction of the happiness and family life of others, so frequently exhibited by those that are psychically degenerate (moral insanity). As a rule, these perversions are associated with manifestations of loss.

The coloring of ideas usually painful in themselves with pleasurable feelings is also to be mentioned: One of my patients during the maniacal stage of *folie circulaire* lost her beloved husband, and she had to make a decided effort in order to give the impression of being a mourner. Melancholic patients present the opposite extreme. They likewise are in the power of an abnormal emotion, and to impressions which are normally attended with pleasurable feelings they react only with pain; for example, in their intercourse with their children and acquaintances to whom they are bound by affection they receive only painful impressions. This reaction may be simply passive (misanthropy), or it may even go to the extent of an unfriendly attitude which expresses itself in word and act.

Finally, a peculiar perverse manner of feeling in melancholics is exemplified in the so-called pleasure in pain (Ideler, Emminghaus), in that ideas which are normally felt to be painful call up a feeble feeling of satisfaction in the depressed consciousness, and thus the color of emotions is relatively pleasant.

CHAPTER III.

Elementary Psychic Disturbances. Intellectual Anomalies.

WITHIN the domain of the intellect there are primarily two categories of elementary disturbances:—

1. Disturbances in the formal activity of intellectual processes.
2. Fallacies in the content of ideas (delusions).

1. FORMAL INTELLECTUAL DISTURBANCES.

Anomalies of this kind possess no less importance than those which affect the content of ideas, though by the laity the latter are regarded as of primary importance. Clinically, and especially forensically, it is to be noted that disturbances of this kind may constitute the entire intellectual anomaly (insanity without delusions).

Formal anomalies may be classified as follows:—

(A) Disturbance of the rapidity of ideation.

(B) Disturbance of association in so far as certain kinds of association predominate.

(C). Anomalies affecting the number of ideas in so far as certain ideas remain in consciousness with abnormal intensity and duration.

(D) Disturbance of the association of ideas with sense-impressions (apperception).

(E) Disturbance of the reproduction of former ideas (memory).

(F) Anomalies of reproduction of ideas in changed form (imagination).

(A) Disturbance of the Rapidity of Ideation.

There are two possible anomalies of this kind: Ideation may be abnormally slow or abnormally rapid.

(a) Abnormal slowness of ideation occurs in various conditions: in melancholia and in states of mental weakness (dementia). The cause of this in melancholic individuals, on the one hand, lies in the fact that, owing to the limitation of the content of thought to painful ideas, only such as are in harmony with the state of feeling can enter consciousness; and, on the other hand, in the fact that in melancholics all the psychic processes are subject to inhibition.

The slowing of thought in melancholia may go to the extent of temporary stagnation, which is reflected in consciousness by the feeling of interruption of thought, of becoming idiotic and devoid of the power to think. Owing to this sluggishness of thought, a feeling of monotony necessarily arises which is the principal complaint of

many melancholics. The patient feels just as a healthy person does who is in an emotional state of apprehension. The lack of variety of thought in both cases causes time to seem like eternity, and leads to many purposeless, impulsive acts which are merely due to the necessity of breaking the monotony and permitting the inflow of new ideas.

The slow thought in states of mental weakness is but one of the manifestations of general weakening of the psychic energies, especially that of memory, further conditioned by the lack of interest which ordinarily stimulates the processes of thought, and by defective apperception.

(b) Increase in the rapidity of thought is common to all states of mental exaltation, and the degree of rapidity of ideation is a valuable measure of the intensity of the cerebral excitement.

The milder degrees of this condition are analogous to the expansive emotional state of the sane and the condition when wine begins to loosen the tongue, and characterize the initial stages of maniacal exaltation.

This is one of the general phenomena due to increased ease and rapidity of psychic processes as manifested in the maniacal, especially in the sphere of memory; but in part it is also conditioned by the enlivening influence of the joyful feeling which exists in this state.

This condition expresses itself clinically in greater richness of imagery and words, in bright thoughts, witty replies, and extraordinary talkativeness, and passes progressively into disconnected flight of ideas.

In his flow of words the patient expresses ideas entirely disconnected. The process of association becomes unintelligible, doubtless because in the great rapidity of thought the connecting members of a series of ideas cannot be expressed, or at least they do not enter consciousness with sufficient clearness to find their reflex in speech.

Still higher degrees of increased rapidity of thought may be called flight of ideas. In this condition the patient is no longer able to control his ideation. He passes from hundreds into thousands; he loses the thread of conversation; he is no longer able to arrange logically the abundance of material that comes to him. He expresses senseless ideas, disconnected sentences, words, and syllables, if it still be possible for these to excite a reflex in the mechanism of speech. Usually in this whirl of ideas we find at least some threads of association: the connection of ideas in accordance with contrast or with assonance and alliteration. In this condition logical thought has

necessarily come to an end; and, since the lightning-like ideas can no longer be co-ordinated or placed in logical sequence, the result is incoherence.

Incoherence of thought and speech is, however, not exclusively the result of increase in the rapidity of thought or a symptom only of maniacal states. It occurs also in various other abnormal conditions, and in general under such circumstances it is referable to disturbances of consciousness, especially to disturbances of the faculty of apperception and of the association of ideas. Incoherence or confusion is, moreover, a common phenomenon in affective states, especially where these are manifested by a predisposed or weakened brain. In these conditions the violent emotional excitement calls into consciousness a multitude of contradictory ideas and prevents their ready apperception, association, and logical succession. This is especially true for the affect of embarrassment, where the painful feeling of uncertainty, of danger of failure, disturbs the development of ideation and makes the intended action or expression in speech impossible.

Confusion is an important symptom in states of psychic exhaustion. In these cases it is to be attributed to a functional weakness in the logical combination of association, as a result of which the threads of thought are continually broken, the train of thought rendered imperfect, and often totally unrelated ideas forced into the mind. Of this nature, in such delirious states of weakness, is the constantly occurring interruption of the logical processes of thought by delusions, illusions, and hallucinatory perceptions, which in themselves call up chains of ideas that are totally inharmonious. In such states there are frequently disturbances of consciousness, especially of apperception, of a peculiar kind (mental blindness and mental deafness). In these cases the perceptive centers are incapable of reproducing previous memory-pictures—the patients are absolutely unorientated in the external world—or the memory-pictures reproduced are incongruent with the simultaneous sensory impressions.

Incoherence also occurs in terminal states of mental weakness, where masses and whole series of ideas have been lost; words and concepts have undergone a pathologic transformation, or even new words have been formed, and chains of ideas that have been fixed by habit constantly force themselves into the process of thought.

In all these cases the result is insane speech and insane action; both anomalies, however, are not necessarily combined.

Incoherence of speech may also result from simple paraphasia and word-deafness. Correctness of conduct points to the existence of

this phenomenon of confused and inverted speech, with retained intelligence, which occurs sometimes in some focal diseases of the brain.

Meynert has described a certain form of confusion as pseudo-aphasic confusion: *i.e.*, lack of orientation, as a result of mental blindness and mental deafness with lessened ideational activity (judgment), and a feeling of anxiety present in the clouded consciousness due to the lack of understanding of the events in the external world, associated with amnesic, aphasic, and paraphasic phenomena.

(B) Disturbances of Association.

Under this heading belongs the one-sided predominance of certain forms of association. In insanity it may happen that the process of thought is dependent upon external similarity of sound—the similarity of words—while under physiologic conditions the ideas are called up in accordance with their content and their causal relations, and assonance and alliteration play but an accidental and very subordinate part.

This disturbance of association, which is most beautifully exemplified in maniacal states, may be called a play of syllables. The patient speaks in verses, which are, of course, imperfect; or he strings words together which have no logical connection and are only related through similarity of sound.

One of my maniacal patients presented the following association of ideas: "Ich lieg' an der Wand, geben Sie mir die Hand; geben Sie mir einen Kuss, und da gibtes viel Verdruss; ich muss haben einen Sterz, und das Auge sieht himmelwärts; legen Sie die Hand auf mein Herz! Ach, das macht mir Schmerz."

Another abnormal manner of association is presented by those cases where a reproduced or apperceived idea is constantly and insistently associated with the question "Why?"

The abnormality of this phenomenon is shown by the fact that it occurs paroxysmally and is associated with other nervous symptoms; that while it is burdensome to the patient, the answer to the question is often entirely useless and related to religious and metaphysic things which have not the slightest interest for the patient.

Griesinger was the first to call attention to this interesting anomaly, and he called it *"Grübelsucht."* Related to this Meschede reported some cases which he called "phrenolepsia erotematica," in which the patient's thought constantly took the form of questions and kept him constantly busy with problems, besieging those about him with questions, but having not the slightest interest in the answers.

This phenomenon, which occurs almost exclusively in those predisposed and especially in individuals exhausted by sexual excesses, forms the transition to the following:

(C) Disturbances in the Intensity and Duration of Ideas.

Imperative Ideas.

There are numerous nervous and emotional patients who complain of certain troublesome, annoying thoughts, the absurdity and irrelevancy of which they perfectly comprehend, but of which they cannot rid themselves. They complain that these thoughts constantly force their way into their conscious logical and associated ideas, disturbing the course of them and causing much annoyance. Indeed, such thoughts may be associated with impulses to carry out the corresponding acts, which in some instances the patients recognize as silly or revolting.

Such thoughts, which are fixed in consciousness with abnormal intensity and duration, I called "imperative ideas" in 1867. The primary origin of an imperative idea is spontaneous; it comes into consciousness suddenly, or it is called up by some violent external event (murder, execution, fire, suicide of some beloved person, etc.). Its formation in the first case cannot possibly be due to the psychologic awakening of ideas in the usual manner of association; it must be called up and maintained by inner physiologic stimuli affecting the psychic organ. Thus is explained its effect to disturb conscious thought and its strange content and irresistible power against the energy of ordinary association. With respect to their manner of origin, these imperative ideas resemble primordial delusions in contrast with delusions formed psychologically by means of association and reflection. They are spontaneous, primary creations of an abnormally organized or diseased brain: the immediate product of unconscious thought, like the majority of hallucinations in the psychosensorial sphere. These imperative ideas have analogies in certain images, thoughts, and musical motives, which under physiologic conditions mix themselves in our quiet thinking and have no relation to our thoughts, but distract and annoy us; and they are in some instances so persistent that they can be overcome only after considerable effort of the will and strain of the associative mechanism.

Here we are also evidently concerned with spontaneous creations which result from physiologic excitation of the ideational centers; for the fact that they do not arise by way of psychic association is proved by their strange and disturbing content, and their resistance to the power of association. In many cases the motive of imperative ideas

remains obscure; in other cases there are organic feelings and neuralgias which enter consciousness simultaneously and apparently induce the ideas and are always sufficient to call them up. In instances where an external event acts as a cause, we are dealing with a central organ that is unusually impressionable; and in this case the phenomenon is analogous to what we know as an after-sensation.

Here, too, feelings of bodily discomfort may be coincident; there may become associated with the imperative idea *in statu nascendi* excitations of the sensory paths, and thus fix the abnormal idea in consciousness. These truly fixed ideas, or imperative concepts, are differentiated from delusions in a strict sense by their relation to consciousness, which invariably looks upon them as abnormal phenomena, and thus stands apart from them.

The content of these imperative ideas may be quite as varied as that of delusions. Where the thought is called up by a perception the imperative idea consists of the continued activity of apperception with reference to the original disturbing thought and the associated fears and imitative impulses which occur with special intensity, even with violent fear, when the original perception or one related to it recurs. In the greatly intensified state of excitability of the ideational sphere that exists in such patients, the most unrelated memories and perceptions may call up the imperative idea. Not infrequently this happens through contrast.

I have reported a great number of cases of this kind in other places (*Vierteljahrsschrift für gerichtliche Medicin*, January, 1870). It is not infrequent for such patients to feel an impulse while in church during the sermon to blaspheme God, or in praying to use the word hell instead of heaven; at the sight of relatives, to think of murder; in crossing water, to think of pushing in a person present; at the sight of weapons, to commit suicide or to imitate horrible crimes, etc. In certain patients, afflicted with the impulse to constant questioning about religious and metaphysic things, and with the imperative thought of filth or poison, we find associated inability to touch metal objects, clothing, etc. (*folie du doute avec délire du toucher; vide* "Special Pathology").

Cases of so-called agoraphobia (Westphal) are especially interesting. When persons thus afflicted enter an open space or pass through a street that is devoid of people they are immediately overcome by the imperative idea of the impossibility of going on, and thus they become so anxious and nervous that they are actually paralyzed; while, if they keep close to the houses or are accompanied by some one, they have no difficulty whatever. Jolly very correctly compares the psychic uncertainty of certain neuropathic individuals, when required to act in the presence of others, and impotentia psychica coeundi with these interesting conditions of agoraphobia.

Emminghaus classes these phenomena with states of anxiety; but this anxiety is clearly only a reactive, if not a subsidiary, phenomenon. The

primary element is the imperative idea of impossibility of action and the danger connected with it. The imperative thought is either founded in a temporary or lasting feeling of muscular weakness (Cordes explains agoraphobia simply as exhaustion-paresis), or in the memory of a fright, accident, or failure which arose under similar previous circumstances. In the latter case consciousness of former and present muscular weakness and disturbance of general feeling are also operative. The feeling of incapacity or the thought of previous failure then makes action impossible even to the degree of helplessness. The painful situation in which the patient finds himself leads to anxiety, as a result of which the painful feeling becomes still more intense. This is followed by vasomotor disturbances, pallor, sweating, palpitation, loss of muscular tone, leading to shaking of the knees, trembling, and loss of the senses: true nervous crises. There are numerous analogies of so-called agoraphobia which occur in neuropathic individuals (*comp.* Beard, "Neurasthenia"), among which the aversion to going out alone, resulting from thought of threatening danger (*e.g.*, apoplexy) and impossibility of medical aid; fear of riding in a closed carriage or of going among people because of actual or imaginary fear of blushing; fear of closed rooms like theaters and concert-halls, unless a corner seat is obtainable; fear of thunder and lightning, etc., are the most frequent.

Under all circumstances where such imperative thoughts and fears occur there is a state of irritable weakness in the central nervous system as one symptom of a temporary or lasting functional weakness of the brain (neurasthenia). This is also true of those well-known physiologic imperative thoughts and impulses, such as the inclination to throw one's self off of towers and high places or to push others off. They always occur when there is a relative exhaustion resulting from mental strain, sleeplessness, lack of food, etc., and they disappear after eating and after indulging in alcohol; just as those who are afflicted with agoraphobia and similar conditions are temporarily relieved by the same means.[1]

Imperative ideas of nervous and mental patients likewise are always founded upon a state of neurasthenia. Frequently these individuals are constitutionally neuropathic, though numerous cases occur in which neurasthenia is acquired. Sexual excesses, onanism in particular, are especially influential as causes; and besides, mental strain, especially when associated with emotional excitement, exhausting diseases, the puerperal state, etc. In his experience Cordes found prolonged gastric disturbances and corpulency with fatty heart to be causal factors.

The first occurrence of an imperative idea during a phase of special excitement (menses, pregnancy, lactation), or with some simultaneous weakening excess, and the success of tonic treatment, are other important indices.

Imperative ideas are elementary disturbances which occur in the course of mental disease (melancholia, paranoia), or in a neurosis (neurasthenia, hysteria, hypochondria); or they are primary, multiple, and lasting, and lead

[1] Agoraphobia, claustrophobia, and fear on high places often have a physical foundation in lesion of the internal ear. No case of this kind should ever be allowed to pass without careful examination of the reaction of the patient to the galvanic current in the test for voltaic vertigo (*vide* footnote on page 113).—TRANSLATOR.

to secondary anomalies of feeling and action; so that they represent a true insanity of imperative ideas which requires special description in the section on special pathology.

(D) Disturbances of Apperception.

In order that a sensory impression may be recognized, it is necessary that it call up in the perceptive centers of the cerebral cortex the corresponding memory-picture. This result is favored by a process of innervation taking place in the psychic organ which we are accustomed to call attention. The inteusity of this excitive process is constantly varying, and thus the threshold of excitability of the central organ is constantly varied. Expectation of a sensory impression favors its perception, while, on the other hand, a great number of sensory impressions never attain to the distinctness of perceptions, because attention is wanting or diverted.

Apperception is changed in the insane. It is lessened or may be entirely wanting as a result of concentration of consciousness upon inner phenomena (melancholia with stupor, ecstasy); just as in the case of a normal person who is pre-occupied with some mental work, so that only that which lies in the narrow field of thought is perceived.

Analogous phenomena occur in sleep-walkers, who perceive only those things which are related to the ideas which constitute their dreams; likewise in hypnotic somnambulism, where perceptions result only from suggestion. Apperception may also be impossible as a result of want of excitability of the perceptive organ (states of exhaustion, stupor), or owing to the destruction of the latter: *i.e.*, the destruction of the memory-pictures once stored in the destroyed center (mental deafness, mental blindness, dementia). An increase in the powers of apperception takes place in the emotional states of expectation, both in the healthy and diseased, and also in the milder degrees of psychic excitation (maniacal exaltation, hysteria, febrile states). This is manifested not merely in increased ease of apperception, but also under some circumstances (many hysterics, hypochondriacs) in a sharpening of perception. Emminghaus justly calls attention to the fact that in this erethism of the brain the attention is constantly excited by sensory phenomena. As a result of this one-sided control of consciousness the intracentral activity of thought, judgment, etc., must be disturbed (confusion as the opposite of concentration).

(E) Disturbances Affecting the Exactness of the Reproduction of Ideas (Memory).

Reproduction of ideas may take place with abnormal ease or with abnormal difficulty.

Facilitated reproduction (hypermnesia) as found in states of exaltation (mania) is one of the symptoms of the general increased ease with which psychic processes take place. It is invariably accompanied by abnormally intense coloring of reproduced images. In such states of exaltation the freshness and clearness with which numerous images and ideas which apparently had disappeared are recalled into consciousness are astounding. More important and more frequent are the interference and loss in the domain of memory (amnesias). Amnesia depends either upon a simple and usually temporary inhibition of reproduction of virtually retained ideas or is based upon an actual and lasting loss of mental pictures.

In the first case there is a simple functional disturbance in the organ of memory. Here the hindered or temporarily impossible reproduction is a symptom of the general inhibition of psychic processes (melancholia, cerebrasthenia), or of a more or less severe exhaustion of the psychic organ (states of mental fatigue and exhaustion), and it is in part referable to faintness of external impressions, defective emotional coloring of ideas, and weakened or inhibited association of ideas. The patient is painfully conscious of this disturbance.

Actual loss of memory-pictures is, as a rule, a lasting defect of mental power conditioned by grave destructive diseases of the psychic organ (dementia paralytica, dementia senilis, etc.).

In this case amnesia in the true sense of the word exists. In the beginning of these destructive processes there is merely a weakness of reproduction of the latest events. Ribot shows empirically how in progressive brain diseases the weakness of reproduction progresses, as it were, in accordance with a law, so that ultimately it affects the memory of earliest events (progressive amnesia); that finally even the impressions of childhood—indeed, even the memory of previous personality—are lost.

In the infrequent cases in which memory returns (certain cases of stupidity and traumatic insanity) the re-creation of memory-pictures takes place in an inverse manner compared with the manner in which they were lost; those for latest events are the last to be recovered.

The patient whose memory for late events has been lost lives in time long past. These lost intervals may cover years or even decades.

Amnesia may also occur episodically and be but temporary, in that events which take place during the time of disease can be reproduced only incompletely or not at all.

The answer to the question whether events of a sickness will be later reproduced depends upon the intensity of the disturbance of consciousness occasioned by the pathologic process; at least with relation

to this, there is a decided parallel between the disturbance of memory and the disturbance of consciousness. There is also a similar relation between the latter and the acuteness of the disease-process.

In very acute states of insanity memory fails almost entirely (pathologic states of alcoholism, toxic delirium, transitory mania, raptus melancholicus, grand mal of epileptics, pathologic affects, etc.).

In some cases it is limited to the content of the delusions (ecstasy, somnambulism, certain epileptic states), which may be explained by the fact that during the condition lack of perception of the external world exists, or at least the sensory impressions take place but sparingly or faintly, while the central spontaneous excitation (as a result of physiologic organic excitement) is very lively.

In acute insanity (acute melancholia, mania, hallucinatory insanity, stupor, and certain states of epileptic delirium) memory is usually only summary.

In chronic cases memory of all events and experiences is often retained in most painful detail.

Especially interesting are those cases in which amnesia of the time of the sickness extends over a certain time of the normal life before the attack.

An interesting example of this "destructive temporary amnesia" is reported by Ribot. A young wife in the puerperal state was taken with an attack of long-continued fainting. When she regained consciousness she had lost memory for all that had taken place since her marriage, while she still retained an exact memory for all events of her life up to that period. Her husband and child appeared to her as strange persons; only upon the evidences of her relatives would she believe that she was married.

Such retroactive amnesia is not infrequent after head injuries.

Finally the partial amnesias are of great scientific interest. The latest physiology of the cerebral cortex—in accordance with which there is a central area for each sense, a place where memory-pictures are stored up—explains these cases at once. Functional and focal diseases of the cortex may cause these amnesias. Examples of this are offered by cases of aphasia, mental blindness, and mental deafness.

Such partial amnesias are not infrequent as temporary and episodic phenomena in the hysteric and epileptic psychoses, and also in a lasting and progressive form in the initial stages of dementia paralytica and senilis. Apparently those powers of memory which are weakly constituted or which have been little used are the first to be lost.

As a transition to the elementary disturbances of the following section we have yet to consider the disturbances of memory which consist of this: that ideas appear in consciousness which are supposed to be memory-pictures, or actual memory-pictures reproduce themselves in a false form.

This category of disturbances of memory, which touches the domain of disturbances of imagination, of consciousness (critic), and illusion, may, with Kräpelin, be called paramnesia, or fallacies of memory; or, with Sully, illusions of memory. In analogy with errors of the senses, Sully well differentiates:—

(a) Phantasms of memory: *i.e.*, supposed memory of things which have never been experienced.

In this condition pure fancies are regarded as having been actually experienced. These phantasms of memory are due to fallacies of discrimination, and depend upon weakness of judgment or upon special intensity of the present impression which calls up the supposed memory-picture. This confounding of an actually lively idea with a memory-picture is very common in paralytics, who tell of supposed visits and adventures, relate fabulous tales covering periods of their lives, and even surpass the famous Münchhausen ("hallucinations of memory, or pseudo-hallucinations"). Improperly, as a result of pure defect of discrimination, the confusion of what has been dreamed, read, heard, or experienced in delirium with that which has been actually experienced belongs here. This paramnesia, consisting of confusion like that which occurs in children who confound actuality and the events of dreams, may occur in the initial stage of dementia senilis, in states of neurasthenic exhaustion, and in dementia paralytica. This fallacy is quite insignificant, since it is soon totally forgotten.

More frequent and important are the analogous phenomena that occur in melancholics, who confuse crimes of which they hear or read with those they may have committed, and under some circumstances accuse themselves of them; and also the confusion of delusional ideas with actual events by paranoiacs and the delusional insane.

Kräpelin justly points out that these errors of discrimination (fallacies of memory—Kräpelin) differ from pure creations of the imagination in the constancy of their content in contrast with the changing and altered content of the latter when repeatedly related.

(b) Illusions of memory in the narrower sense: *i.e.*, memory-pictures in fallacious or defective form. This disturbance depends upon defective reproduction and lively fancy, or upon the falsifying illusional influence of a momentary state of emotion. "Here the past appears in the color of the present" (Sully); the latest moment plays a very active rôle in the memory-illusions of the melancholic and the maniacal.

The first conditions occur in states of mental weakness, in paranoiacs, and in the hysteric.

The weakness of exact reproduction peculiar to these patients is also common in those afflicted with moral insanity. As a result of it the reproduced image is merely similar to the original idea, not identical, though thought to be identical. Such patients are necessarily unconsciously untruthful, because that which has been experienced is reproduced by them in a totally changed form.

There is yet to be mentioned a peculiar form of paramnesia—the so-called "hallucination of memory": *i.e.*, the identification of a present situation with one which is assumed to have been experienced. This interesting fallacy more frequently occurs in the sane, in states of slight fatigue or exhaustion, than in the insane (paranoia, states of mental weakness, epilepsy, sometimes also mania. Neurasthenics are also not infrequently affected by this fallacy. With consciousness intact, a painful feeling of uncertainty is connected with it. Faintness of immediate impressions, as well as similarity of them and a former situation, seems to lie at the foundation of this fallacy; possibly also faintness of the memory-pictures analogous to that which occurs in the mistaking of persons is also effectual.

(F) Anomalies of Reproduction of Ideas in Changed Form (Imagination).

Just as in disturbances of memory, there occur here also states of increased, weakened, or lost imagination. States of increased imaginative power occur in insanity in general in states of psychic excitement and facilitated association of ideas. The emotional warmth of ideas and their intensity, largely increased as a result of their physiologic origin, favor the activity of the fancy. Its creations then approach the borderland of phantasms, and often such especially lively ideas, which the insane have in common with the child and the artist, are mistaken for actual hallucinations (*vide* "Pseudo-hallucinations").

The activity of imagination is especially intensified in the excited states of paralytics, in certain epileptics, and in paranoia, especially in the original form of this disease.

The legendary and plastic stories of such patients leave nothing to be desired as far as the warmth of fancy is concerned, even though they may be wanting in esthetic worth and logical connection; they sometimes surpass even the finest fancy of the poet.

The loss of imagination and the preceding strange and monstrous character of the creations are signs of mental weakness, and in insane artists they are a delicate index of the initial stage of psychic decay (loss of esthetic feeling).

2. Fallacies in the Content of Ideas (Delusions).

Delusions—*i.e.*, anomalies in the content of ideas as a result of brain disease—are among the most interesting and important insane phenomena.

The idea of the laity that the decisive marks of insanity are delusions is, however, erroneous. Instead of these, merely formal disturbances of the processes of thought, or phenomena indicating loss on the intellectual side of mental life, may be the prominent symptoms in the disease-pictures.

The proof of the existence of a delusion as a symptom of mental disease is of the greatest importance.

It does not follow because some one has expressed a delusional idea that he is insane. The sane may entertain the most outlandish false ideas, and even in this respect surpass the insane. On the contrary, the delusion of an insane person need not necessarily contain an objective impossibility (delusion of marital infidelity, of poisoning, etc.); indeed, the delusion itself may be objectively correct and at the same time have the value of a delusion: like the idea of a hypochondriac melancholic (possibly luetic) that he is infected, the idea not resting on a diagnosis based upon a knowledge of medicine, but upon his effort to explain general disturbances of feeling and consciousness, which might quite as well be attributed to some other disease with which he is not afflicted, in order to explain his abnormal sensations. In the psychiatric sense the content of a delusion is not decisive for the determination of the existence of insanity; the less, since even the most monstrous content does not prove that the individual is convinced of the truth of the idea; for simulation may be in play. Even the circumstance that a man acts in accordance with the delusion which he expresses can be no criterion.

Here it is not the content which is decisive, but the manner of origin of the delusion in question with its interpretation and relation to the past and present consciousness.

For the differentiation of the delusion of an insane person from the errors of the sane, the following points are of value:—

I. The delusion is a product of a brain disease, and thus has a pathogenesis; it is further a symptom of a general abnormal condition, and thus is genetically and clinically related to other symptoms, affects, abnormal emotions, sensations, etc.

On the other hand, the error of a sane person depends upon a defect of logical judgment or upon a false premise that has arisen out of uncertainty, carelessness, or embarrassment in the act of perception (affects, superstition, etc.).

2. A delusion of the insane is a symptom of a brain disease, and therefore logic and reasoning are powerless against it. It stands and falls with the causal disease. It is quite as easy to argue the delusion out of a patient as it is to cure him of his disease by talking. On the other hand, the sane

person will see his error, and correct it as soon as it is shown to him to be absurd.

3. Since the delusion of a patient depends upon a grave disturbance of mental functions, it is clear that it must stand in striking contrast with his former ego, with his previous manner of thinking and experience (think of a physicist who fancies he can fly; of a mathematician who thinks he has squared the circle; of a chemist who thinks he has discovered the art of making gold). The error of a sane person will be understood when it is considered with relation to his previous opinions and his previous education; at least, it will not stand in contradiction with these.

4. The delusion of an insane patient always has a subjective significance and an inner relation to his interests; that of a sane person appears only as an objective error. Thus, both may believe in witches; the sane person, however, as a result of superstition and ignorance; the insane person believes in them because he sees, feels, and believes himself threatened by them.

This explains the varying manner in which they both react to their delusions: that of the sane person remains without special influence upon his acts; that of the insane patient—until psychic weakness intervenes—may induce the most violent emotional reaction and acts. Here it is, indeed, "*tua res agitur.*"

Decisive diagnostic weight can be laid upon a delusion only when it has been followed back to the conditions of its origin.

How do delusions originate? Ways in which they originate are exactly like those in which, in physiologic life, the content of experience is enlarged. We gain correct opinions first from judgment based upon given premises, in case both conditions are perfectly fulfilled (ideational or combinational way); or, secondly, as a result of new correct sense-perceptions (apperceptive way). In accordance with this, then, delusions arise, first, as a result of false judgments (ideational way); or, secondly, as a result of false perceptions (hallucinatory way).

In accordance as they arise either by ideation or hallucination, delusions may be divided into intellectual and sensorial delusions. The idea which becomes a delusion or hallucination may arise either in the conscious or unconscious mental sphere. In the first case the transformation to a delusion depends upon a conscious psychologic act; in the second case we must assume the existence of an organic unconscious origin, out of which the delusion appears in consciousness as a completed result.

The ways in which disturbances of the content of ideas may arise within the sphere of consciousness are the following:—

(a) False judgment concerning abnormal states of consciousness (emotional states, affects, etc.) or sensations.

(b) False combination of percepts and experiences in general to form defective conclusions.

(c) The confusion of what has been dreamed, read, etc., with actual events.

Possibilities under *a* and *b* may be called delusions of judgment; those under group *c,* delusions of memory.

Delusions that arise unconsciously or organically may be due to central or reflex processes.

In the first case, the delusion appears as the direct product of disturbance of nutrition in the cerebral cortex (febrile, toxic, inanition). In the second case, the delusion arises indirectly and reflexly, and is induced by the transference of a state of excitation from a peripheral organ. In this relation functional and organic disturbances of the digestive (hypochondriac delusions) and genital (erotic delusions) organs are especially important. Of great clinical importance is the contrast which exists between false ideas arising from erroneous ideational and associative activity with consequent effort to explain them in the sphere of consciousness, and those which depend upon an organic foundation and enter consciousness in a completed form. Owing to this distinction, it would be well to use distinctive terms and call the first delusions and the second deliria.

The former also differ from the latter in that their psychologic mode of origin is clear; they may be referred to their genetic cause; they are in accord with the predominating emotional state; they enter into the process of association of ideas, become logical elements of thought, and lead to a systematic association of the delusions.

The latter (deliria) are, on the contrary, out of harmony with the present feelings and ideas, and possibly in contradiction with them. They do not logically satisfy the patient, but surprise and astound him; they have rather a painful than a quieting effect, like that of imperative ideas. At first the patient does not know how to comprehend these ideas; only later and with great difficulty does he assimilate them and find a motive for them, after they have come to exert an influence upon his thought and feelings. At first they act as an annoyance, not as a relief.

A further interesting question is: What influences have an effect upon the content of delusions and deliria?

The opinion of the laity that the content of a delusion depends upon special moral causes that may have caused the outbreak of insanity is erroneous; for it is only in rare cases that events which were disturbing and occurred before or caused the outbreak of disease are carried over into and expressed in the insane state; in certain cases their effect may not have disappeared, or it may be repeatedly reproduced by some physical anomaly, such as a neuralgia, that has resulted from shock and is genetically associated with the fundamental idea. As a rule, they do not appear in the content of abnormal

consciousness, since they are only a link in the chain of etiologic elements, or pathogenically irrelevant. The decisive factor is the brain disease. This, as a rule, brings about a change of consciousness and an altered content of consciousness, and by its peculiar character determines the content of eventual delusions.

The peculiar content of delusions (deliria) seems to depend:—

1. Upon the nature of the abnormal processes in the cerebral cortex. It is surprising, and it was justly pointed out by Griesinger, how in certain abnormal states patients of different races and epochs present the same typical delusion, just as if the patients had read the same novel or had been infected one by another. This remark is especially true with regard to delusions of primary origin, devoid of hallucinatory or emotional foundation, like those that occur in paranoia (delusions of persecution and grandeur), in dementia paralytica (primary delusions of grandeur), in dementia senilis (nihilistic delusions), and in chronic alcoholism (delusions of jealousy). Certainly in these cases the similarity of the disease-process must be the foundation for the similar content of the delusions.

Griesinger proposed the name of primordial deliria for these primary and congruent false ideas, and he ingeniously compared them with the color deliria that occur in epileptics as an aura of attacks, where the central excitation induces auras of only a few colors (especially red) in all patients, though the possibility of a variety of colors is so great.

Likewise the typic delusions in delirium tremens, in opium intoxication, and in some other toxic states are caused by specific stimuli.

Considering these facts, it seems a just question whether there are typical deliria of diagnostic value in the psychoses. This question requires careful investigation. In the present state of our knowledge we may say that there are deliria and combinations of deliria which possess an empiric diagnostic value in themselves, and which to the expert constitute a direct indication of a special form of disease, or at least of a special cerebral condition.

Thus there are micromaniacal and nihilistic delusions which justify the suspicion of a severe organic psychosis (dementia paralytica and dementia senilis) or, at least, the assumption of a psychosis affecting a degenerate brain.

Not less noteworthy are the romantic typic delusions of persecution and grandeur that occur in the original (Sander's) form of paranoia; the delusion of physical persecution in late paranoia developed upon a neurasthenic basis, with a special indication in a case that has arisen out of neurasthenia sexualis, when the delusions are accompanied by olfactory hallucinations; the auditory hallucination of obscene persecutory content in alcoholic delusional insanity; the expansive religious persecutory delusions in many epileptics with "deistic nomenclature and royal delusions" (Samt); and the typic imperative ideas of the "*maladie du doute avec délire du toucher.*"

2. The special content of false ideas is dependent upon the predominating state of feeling and direction of thought. This is true

of all delusions resulting from false judgment (false attempts at explanation of abnormal states of consciousness; interpretation of sensations in an abnormal state of consciousness).

3. The degree of education and the life and occupation of the patients are largely determinate.

This is owing to the fact that the abnormal thought is created out of the previous content of the mind, in which the fantastically altered activity of imagination exercises infinite influence.

This dependence upon previous mental endowment is especially clear in the delusions of paralytics. The political and social opinions of various peoples and periods are also mirrored in the delusions of patients.

The delusions of persecution by the devil—widespread in the Middle Ages—is to-day in large part replaced by delusions of persecution by the police, Free Masons, Jesuits, etc.

4. Finally, functional disturbances in extracephalic organs are important either as causes or as mere accompaniments of a psychosis.

These disturbances may induce delusions or deliria in two ways:—

(a) By direct organic excitation of the psychic organ which does not enter consciousness, appearing then in the form of primordial deliria (erotic, hypochondriac deliria).

(b) As a result of false and frequently allegoric fantastic interpretation of sensations conditioned by these extracephalic diseases, which enter consciousness, where the misinterpretation is brought about through reflection or attempts at explanation.

This manner of origin is of the greatest practical importance and suggests the question of what clinical value the special content of delusions and deliria has. On this point the positions of the laity and science are fundamentally different.

The laity lays much stress upon the peculiar content of a delusion, while scientifically it may be a matter of little importance whether a patient thinks himself Julius Cæsar, Napoleon, Bismarck, the Messiah, or God.

Under all circumstances the delusion of a patient is clinically important:—

1. Since there must be a deep clouding of consciousness, of judgment, and of discrimination in order to permit it to exist; therefore a delusion indicates the existence of such a condition.

2. Because it indicates severity of the disease-process (nihilistic, micromaniac delusions of a degenerate brain), and it may even give a particular pathologic indication of some special form of disease.

3. The content of a delusion may give etiologic, diagnostic, and therapeutic indications in extracephalic organs, either functional or

organic in nature, whether the delusion be primordial or appear as the transformation in consciousness of sensations.

It is the task of clinical investigation to extract this kernel from its covering of allegory. The delusions of the insane are quite as far from being meaningless creations of the brain as the dream-pictures of the sleeper.

As in the latter, the fantastic idea of being suffocated may be due to a beginning angina, the idea of a thrust of a dagger to a pleurisy or pleurodynia; so among the insane, we frequently find, as the kernel of a delusion, abnormal somatic processes which, of course, have been allegorically transformed and fantastically exaggerated. Thus, the delusion that a part of the body has been lost may depend upon anesthesia of that part; the delusion of being tortured by an invisible person, upon paralgic sensations; of having snakes in the stomach, upon increased peristalsis of the intestines; of an animal in the stomach, upon gastric ulcer; of labor pains, upon uterine colic. Such delusions of judgment (*vide* "Illusions") are quite the rule in those disease-states which are developed upon neurasthenic, hypochondriac, and hysteric foundations.

4. A delusion may likewise be important as a sign of danger for the patient and those about him: as the expression of an affect which controls the patient, and as the motive of feelings, affects, impulses, and acts which otherwise could not be understood.

5. Finally the special elaboration of the delusion is a measure of the natural mental power of the patient.

The following may be mentioned as noteworthy kinds of deliria classified according to their content:—

1. Depressive delusions.

(a) Where the motive of delusional change of relations is attributed to personal guilt—as delusion of self-depreciation which occurs in states of melancholia (delusions of sin and crime, demonomania, zoanthropia, nihilistic delusions, and delirium of negation).

(b) With motive of the delusional change resting in others, or at least not in self—delusions of persecution as they occur in paranoia and delusional insanity.

(c) Hypochondriac (and micromaniacal) delusions.

2. Expansive delusions (delusions of grandeur) having the motive in attempts at explanation of expansive states of feeling (mania), or as primordial delusions (grave organic diseases of the brain, especially dementia paralytica, and also states of hallucinatory insanity and paranoia).

3. Delirium of apperception arising from disturbances of reproduction and apperception.

Among these are delirium metabolicum (Mendel),—*i.e.*, the delusion of being another, owing to incorrectness in the reproduction of memory-pictures, changed coloring of perceptions, and illusions; and also delirium palingnosticum (Mendel), depending upon errors of memory with defective power of discrimination. This delirium of apperception occurs in paranoia, general paralysis, melancholia, and mania.

The influence of delusions upon the mental life in general is powerful and important; the reaction to the delusion is almost the same as if the delusion were an actuality in normal mental life. Therefore knowledge of the previous personality, the temperament and character of the patient, is of special value in answering the practically important question as to whether and how a patient will react to his delusion. This is very clearly shown in paranoia with delusions of persecution.

In general, acts arising from delusions may be expected from a patient as long as the delusion is fresh and continually excited by emotional states and hallucinations. Abnormal emotions and affects, especially that of fear, may be very powerful. Proof that these reactive phenomena are the result of the delusion, and not primary, and therefore anomalies which condition the formation of the delusion, are of the greatest differential diagnostic importance.

An important clinical difference depends upon whether the delusion is fixed or transient. In the first case, there is danger of a disturbance of series of ideas that are still normal, or at least danger of their distortion. Since the false idea has psychologically the same functional value as a correct one, it is plain that it enters into associations, unites with feelings and impulses, and will therefore influence the previous personality in its subsequent feeling, thought, and will. This influence may go so far as to bring about a complete distortion, even transformation, of the previous personality.

The fearful psychologic power of delusions is no better illustrated than by the fact that it has the power to alter the most fixed associated and historically consolidated mass of ideas of personal consciousness. The delusion that arises in explanatory efforts and by combination is fixed. The delusions that are provoked by hallucinations may become fixed if the hallucinations become fixed.

The explanatory delusion can always be referred to its conditions of origin (changed states of consciousness, abnormal sensations). It also, in general, corresponds with the state of feeling and the content of ideas in general. It is logically satisfying, and thus psychologically it gives relief, and is thus in contrast with primordial delusions. The transitory (desultory) delusion stands in contrast with the fixed false idea and is, for the most part, created by explanatory efforts.

A transitory delusion is not necessarily congruent with the state of feeling, and it may be, with relation to other ideas, entirely foreign. As a result of continual recurrence (many cases of primordial delirium), in time it may attain the significance of a fixed delusion: *i.e.*, become assimilated and systematized. But even a fixed delusion is not

constantly in the consciousness of the patient, no more than a correct idea is constantly present in the consciousness of a healthy person. It may become temporarily latent, and during periods of remission or intermission it may even be corrected. Such a condition is not to be confounded with intentional concealment of a delusion (dissimulation).

Dissimulation is only possible when there is a certain clearness of consciousness which enables the patient to recognize the remarkable and inopportune character of his delusion. It never occurs save in cases of systematized delusions, and actually in melancholia and paranoia.

It is a very erroneous notion that anyone can be mentally sound save with relation to a single fixed idea. This notion is based upon confusion of delusion in the sense mentioned with tics and eccentricities that occur within physiologic limits (fixed ideas as understood by the laity), or in connection with imperative ideas.

Partial insanity and partial responsibility are dangerous theories, based upon these assumptions.

As has been clearly shown by what has gone before, a delusion is always a grave disturbance of the mind, and it cannot be conceived as possible without a grave disturbance of consciousness, or of clearness and power of judgment. If a man were actually sound save for a single delusion, he would necessarily immediately recognize and correct the delusion. The continued existence of a delusion, in spite of seeming health, only proves that the latter is apparent, and the person is much sicker than he is supposed to be. Therefore it is quite unimportant so far as the general judgment of the mental condition of a patient is concerned, whether there be one or several fixed ideas. For the basis of an opinion of the mental condition, one false idea alone suffices. The most remarkable thing for the laity, however, is that with fixed delusions there is logic and method; that the patients understand how to defend ingeniously their delusion against arguments, draw logical conclusions from their false premises, and create a systematized delusional series of ideas. This retention of a logical form of thought, this psychic co-ordination of the mechanism of thought, presents nothing remarkable, however, when it is remembered that practice and habit have brought these into a certain logical formula of thought. This capability is lost only in terminal states of mental weakness, and then indicates a high degree of destruction of the psychic organ.

CHAPTER IV.

Disturbances of the Motor Side of Mental Life (Impulse and Will).

1. Disturbances of the Instincts.

Physiologic life presents two instincts: that of self-preservation and that of sexuality. Abnormal life creates no new instincts, as was formerly erroneously supposed (the so-called instincts to murder, steal, and burn), but the natural instincts may be lessened, increased, or manifested with perversion.

(A) Anomalies of the Appetites.

As far as we yet know, the vagus, and not the sympathetic (celiac plexus), conveys the common feeling of hunger to the sensorium. That the sense of hunger is localized in the area of distribution of the vagus nerves in the walls of the stomach is proved by the fact that things which are not assimilable may relieve hunger. Whether the vagus nucleus or the cortex gives rise to the sensation is uncertain (the cortex in Ferrier's sense, who places a center for general feeling in the occipital lobe; and in that of Voit, who thinks that it is probable that there is a cortical center for thirst).

(a) Increase of the appetite (hyperorexia) is not infrequently episodic or continuous in the hysteric, neurasthenic, and hypochondriac, since such persons very soon after a meal again experience intense feeling of hunger accompanied by lively general feelings of discomfort which loudly demand satisfaction, but which are readily satisfied by small quantities of food (abnormal hunger, bulimia). Stiller attributes this phenomenon to hyperesthesia of the nerves of hunger; Rosenthal attributes it to hyperesthesia of the gastric centers of the vagus. The want of feeling of satiety (polyphagia), as it occurs in chronic dements and dementia, is usually episodic, and is to be differentiated from this phenomenon. A feeling of hunger or a frequent desire for food does not preclude this phenomenon. The patient when he sits down to eat simply cannot get enough. In explanation of this, Rosenthal assumes anesthesia of the vagus centers. Sometimes this polyphagia may also be due to anesthesia of the peripheral endings of the gastric nerves, as a result of chronic gastric catarrh or dilatation of the stomach.

An increased demand for food may also be merely the expression of *ennui* in the melancholic, or of maniacal desire; or it may be due to delusions. For example, a patient may have the delusion that there are several children or a tapeworm in his abdomen, or that he is two persons.

The great desire for food which occurs in the convalescent from severe psychoses, especially mania, is a physiologic symptom like that which occurs in convalescence from other severe diseases, and it is to be explained by re-

membering the enormous consumption of tissues during the disease, which must be replaced.

A special symptom which belongs here is the increased desire manifested by some patients for such things as alcohol and tobacco in the form of smoking and snuff. This is mainly to be observed in states of excitement, especially mania. Feelings of exhaustion and increased pleasurable feelings, associated with the consumption of such stimulants, seem to be the cause. The impulse to alcoholic excesses is very frequently observed in states of maniacal excitement of a paralytic and senile nature, and also in periodic manias.

In states of physical exhaustion and in psychic depression, relief and refreshment are not infrequently sought in indulgence in alcohol, which removes care. Upon such an organic basis chronic alcoholism may be developed. This is not infrequently the case during the climacteric. Persons of neuropathic constitution, in order to overcome their irritable weakness, not infrequently take to drink or to the abuse of morphine.

(b) Lessening of the appetite (anorexia) in many melancholics, hypochondriacs, and hysterics depends upon hypesthesia of the gastric nerves, as a result of which, after taking but a small amount of nourishment, an unpleasant feeling of satiety or fullness of the stomach is induced.

In the psychoses it is more frequently not so much a diminution of appetite as refusal of food (sitophobia), as a result of delusions; for example, of sin, of no longer being worthy to eat, of being unable to pay for food, of not having a body or of suffering closure of the stomach or intestines, of being dead or having dead intestines; or it depends upon voices which command fasting, or upon hallucinations of taste which make the food seem to be poisoned or unclean.

(c) Perversions of the appetite are of the greatest interest. They occur also in the neuroses. In this category belong the pica of the chlorotic (eating of chalk, salt, sand, etc.); the preference of the hysteric for things which have an unpleasant smell and taste (asafetida, valerian, etc.); and appetites of pregnant women, who present the strangest perversions of taste (tobacco, earth, straw, etc.).

Similarly, we sometimes find in insane hypochondriacs, especially in those that are based upon an onanistic degenerate foundation, an actual delight in eating disgusting things: a true impulse to eat spiders, toads, worms, human blood, etc. The cause of this may sometimes lie in the fact that such patients think that there is curative power in these disgusting things. Upon the same basis also rests, perhaps, the desire of superstitious persons for the blood of those that have been executed, of innocent children, virgins, etc., to which folklore attributes healing power; for example, in epilepsy and lues.

A very disgusting symptom in the insane is the impulse to eat things that are absolutely repugnant (skatophagia or coprophagia). This occurs in the maniacal, melancholic, and the demented, and, of course, depends upon a

grave disturbance of consciousness and perversion of the sense of taste. These perverse symptoms in instinctive life—where something which physiologically induces disgust, and which in itself is ideally horrible, becomes the object of desire—point more or less directly to degeneration of the most highly organized nervous elements.

(B) Anomalies of the Sexual Instinct.

These anomalies are very important elementary disturbances, since upon the nature of sexual sensibility the mental individuality in greater part depends; especially does it affect ethic, esthetic, and social feeling and action. Besides, abnormalities of the sexual instinct lead in many cases to sexual errors which may become important causes of insanity.

The anomalies of the sexual instinct may be classified as follows: *(a)* It is lessened or entirely wanting (anesthesia); *(b)* abnormally increased (hyperesthesia); *(c)* it is perversely expressed: *i.e.*, when the manner of its satisfaction is not directed toward the preservation of the race (paresthesia); *(d)* it manifests itself outside of the period of anatomico-physiologic processes in the generative organs (paradoxia).

(a) Anæsthesia Sexualis.—In this condition all the organic impulses from the organs of generation, as well as all ideas and sensory impressions, make no sexual impressions on the individual.

This phenomenon is present physiologically in the child and the aged.

Pathologically it occurs as a congenital and as an acquired phenomenon. There are individuals in whom anything like sexual excitement is absolutely wanting, in spite of normal development and normal functions in the organs of generation. Such cases are very infrequent. The lack of function is a symptom of degeneration, like all congenital anomalies of the vita sexualis. More frequently anæsthesia sexualis is acquired: organically as a result of degeneration of the nervous paths and of the genito-spinal center (diseases of the spinal cord), or of degeneration of the cerebral cortex (diffuse disease in the stage of atrophy); functionally, as a result of sexual excesses, alcoholism, hysteria, and in melancholia and hypochondria.

(b) Hyperæsthesia Sexualis.—In this condition there is abnormal impressionability of the vita sexualis to organic, psychic, and sensorial stimuli. Transitions between this and physiologic conditions are numerous. The immediate reawakening of desire after satisfaction is decidedly abnormal, especially when the entire attention is taken by it; and no less so is the awakening of libido at the sight of persons or things which in themselves are sexually indifferent (Emminghaus). In this condition olfactory impressions, which in healthy human beings

have no effect, and in animals have an influence upon the sexual instinct, may have an exciting influence.

Rarely excessive libido is peripherally induced: pruritus, eczema of the genitals, genital neuroses, etc. For the most part, it is of central origin or one of the symptoms of functional or organic disease-processes affecting the cerebral cortex (hysteria, states of psychic exaltation, dementia paralytica and dementia senilis). In such cases, however, the sexual instinct may be but seemingly intensified, since, owing to the loss of all healthy inhibition, it is recklessly expressed. In cases where sexual and (equivalent) religious delusions are continually entertained, the first assumption is justified.

States of psychic excitement in which an abnormally intensified instinct comes into the foreground of the disease-picture are called satyriasis in man and nymphomania in woman. The essential element here is a condition of psychic hyperesthesia with intense implication of the sexual sphere. The imagination calls up only sexual images, which may go to the extent of hallucinations and even true hallucinatory delirium. Everything calls up sensual images, and the lustful coloring of ideas and apperceptions is extreme. All the feelings and impulses are controlled by this powerful psychosexual excitement. As a rule, the genital organs are in a state of continuous turgor.

The man affected with satyriasis desires sexual gratification at any price, and as a substitute may abandon himself to onanism or sodomy. The nymphomaniacal woman seeks to attract men by exhibition or lustful gestures, and at the sight of them becomes extremely excited sexually and may resort to onanism or "*imitatio coitus.*"

Satyriasis is infrequent; nymphomania is more common, and sometimes occurs in the climacteric and even in senility. With great libido and constant excitement of it, abstinence may induce these conditions, though only in degenerate individuals. These conditions also occur in chronic and milder forms, leading men to the grossest sexual perversity and women to prostitution.

Sexual hyperesthesia is far from being directed always to normal satisfaction of the sexual impulse.

The following may be regarded as clinical equivalents in women: Inclination to coquetry, seeking the society of men, desire for personal adornment, suspicion of the virtue of other women, inordinate use of pomades and perfumes, and constant conversation on the subject of marriage and scandals. In the presence of physicians the sexual sphere is constantly alluded to, and conversation is directed to the menses and pregnancy; the need of gynecologic examination is expressed, retention of urine is simulated, and in case of necessary examinations evidences of immodesty are manifested. Religious excitement and the inclination to indulge excessively in religious devotions must certainly be regarded as clinical equivalents.

The religious idea of marriage; the relation of the church and Christ, which is looked upon as that existing between the bride and bridegroom; the condition at puberty, when an emotional state of excitement, which is due to indefinite sexual sensations, are very easily transformed into religious enthusiasm; the history of the saints, detailing mortifying of the flesh; and

the practice of certain sects, whose revivals and meetings often degenerate into horrible orgies, are physiologic phenomena which speak for the inner organic relationship between religious excitement and sexual impulse.

But also in insanity this relationship is shown by a gross mixture or alternation of erotic and religious deliria, frequently seen in maniacal states. Not infrequently religious exaltation is accompanied by great sexual excitement and impulse to onanism; onanists frequently manifest religious delirium, expressed in ideas of mystic union with the deity and corresponding visions and voices.

The impulse of maniacal girls to make pilgrimages, to take part in missions, and to become nuns or servants of priests (in which there is much talk of innocence and virginity) is something quite common.

(c) Paræsthesia Sexualis.—In this condition the patient is sexually excitable to inadequate stimuli. This anomaly is of the greatest clinical and forensic importance, especially as it is frequently associated with sexual hyperesthesia.

In paresthesia ideas which are normally colored with feelings of displeasure are associated with feelings of libido. These become so intense as to reach the degree of affects. Then perverse sexual acts may be expected. Owing to the simultaneous presence of hyperesthesia, ideas and perceptions which have not the slightest relation to the sexual life may gain sexual significance and effect. The perverse sexual impulse may be directed (1) toward the opposite sex or (2) toward the same sex.

1. Perverse activity of the instinct for the opposite sex appears in the clinical forms of *"sadism," "masochism,"* and *"fetichism."*

At the foundation of sadism there is a physiologic, though weakly constituted, association of lust and cruelty. Under pathologic conditions this association may be intensified beyond measure: namely, when the lustful coloring of cruel ideas has reached the intensity of a powerful affect.

If at the same time the moral sense be defective, and thus the possibility of opposing ideas is wanting, the conditions for the origin of monstrous acts, as a means of satisfaction of perverse sexuality, are present.

The performance of sadistic acts is essentially influenced by the state of virility of the sadist.

If virility be normal, the sadistic impulse finds expression normally, but with preparatory or simultaneous or subsequent maltreatment of the consort, which may go to the extent of murder ("lust-murder"); and in the latter case the victim is sacrificed, as a rule, because libido has not been satiated by the consummated sexual act. As a result of continued lustful excitement the maltreatment may be carried further: hacking the body to pieces, wallowing in and smelling the intestines as a result of olfactory and gustatory ideas colored

with lustful feelings, carrying away portions of the body, and anthropophagy. If the sadist is psychically or spinally impotent, equivalents are found in choking, stabbing, or whipping women; or under some circumstances in very silly acts of violence toward women (symbolic sadism), or, in their absence, toward any living object (whipping of schoolboys, recruits, pupils, cruel treatment of animals, etc.).

Masochism is the opposite of sadism. It depends upon lustful coloring of the idea of being maltreated by the sexual consort and of being entirely within her power.

From this arises the impulse, accompanied by a powerful affect, to bring about the situation that gives pleasure in thought; and, in accordance with the state of psychic and spinal potence, this is attempted, either as a preparation or accompaniment to induce lustful satisfaction in the act, or to intensify it and make it an equivalent. In this condition, in harmony with the degree of intensity of the perverse impulse and the remaining power of moral and esthetic opposing ideas, we meet a series of acts extending from the most disgusting and monstrous to others that are merely silly (seeking maltreatment, insults, especially passive flagellation, etc.).

Fetichism depends upon lustful emotional coloring of ideas of single portions of the body, or of portions of the clothing of women. The pathologic significance of this manifestation is shown by the fact that the portion of the body which has the value of a fetich for the individual never has any direct relation to sex; that all sexual interest is concentrated upon a given portion of a person of the opposite sex; and that, as a rule, in the absence of the individual fetich the normal sexual act is impossible, or at least only possible with the help of corresponding mental images, and under such circumstances is devoid of complete satisfaction.

But the abnormality of this phenomenon is shown with special clearness by the fact that the fetichist often finds the real means of sexual satisfaction, not in the normal relation, but in some manipulation of the part of the body or object which constitutes the fetich.

The fetich varies with the individual. It is always the result of an accidental occurrence which has established the relation between this single impression and lustful feeling. Just as within physiologic limits the hand, the foot, and the hair have a prominent fetichistic significance, so in pathologic cases these portions of the body are most frequently fetiches. The most important factors in the fetichism of dress are certain fashions, colors, or portions of feminine attire (especially underwear—chemises, underskirts—and handkerchiefs) that are accidentally during the period of puberty brought into association with intense sexual excitement.

The feminine shoe is remarkably frequent as a fetich, though, for the most part, it becomes so as a result of masochistic ideas.

Finally there are cases in which the fetich is some particular material (furs, velvet, silk) devoid of any relation to sex. Pathologic fetichism may lead to the most extraordinary, unnatural, and even criminal acts: satisfaction *loco indebito*, cutting off of women's hair, theft of female garments: handkerchiefs, chemises, gloves, and silks. In these cases, as in other perversions of the vita sexualis, it depends only upon the intensity of the perverse impulse and the relative strength of ethic opposing motives whether such acts are committed. Fetichism is also not infrequently the cause of psychic impotence.

In cases in which sexual feeling is directed toward the same sex, there is absence of normal sensibility for the opposite sex, while inclination and instinct are directed toward the same sex ("contrary sexual instinct"—Westphal). In such cases the genitals are normally developed, the glands are normal in function, and the sexual type is completely differentiated.

When the development of this anomaly of peculiar sexual sensibility is complete, feeling, thought, and activity do not correspond with the anatomic and physiologic sex of the individual. In carriage, dress, and occupation this abnormal manner of feeling may be seen, and it reaches the extent of impulse to wear clothing corresponding with the sexual rôle in which the individual conceives himself.

This abnormal phenomenon presents various degrees of development, or form, clinically and anthropologically.

1. With the predominant homosexual feeling there are traces of heterosexual sensibility (psychosexual hermaphroditism).

2. Exclusive inclination to the same sex (homosexuality).

3. The whole psychic existence is altered to correspond with the abnormal sexual feeling (effemination and viraginity).

4. The form of the body approaches that which is in harmony with the abnormal sexual feeling. However, there are never actual transitions to hermaphrodites. On the contrary, the genitals are completely differentiated; so that, just as in all abnormal perversions of the sexual life, the cause must be sought in the brain (androgyny and gynandry).

This sexual perversion is, as a rule, congenital, and as such is observed only in persons of abnormal constitution. As a rule, there is hereditary taint, frequently in the form of some constitutional neuropathic condition (hysteria, neurasthenia). In so far as the activity of the perverse sexual inclination is restrained by social and criminal laws, the majority of such individuals become sexually neurasthenic, either as a result of onanism or abstinence, with, of course, the aid lent by the degenerate constitution. As a result of the latter and of the neurasthenic condition, psychoses are not infrequent (*comp.* "Etiology"). Very frequently contrary sexual feeling is accompanied by hyperæsthesia sexualis. Paræsthesia sexualis in its narrower sense also

occurs, just as in association with degenerate instinct for the opposite sex. Psychologically the situation is quite the same as in the normal individual. Love is just as sensual; suffering and jealousy are quite as violent or even more so, since the subjects of this anomaly are, for the most part, burdened, eccentric, and sexually abnormally exacting. *Naturæ frigidæ* are here very infrequent: *i.e.*, individuals that feel merely a sympathy for persons of the same sex or act toward them platonically. For the most part, owing to hyperæsthesia sexualis, there is lively desire for sexual gratification. Persons of the opposite sex may be esteemed, but only for their intellectual qualities; sexual relations with them induce aversion.

If heterosexual relations are forced, neuroses are awakened, or, when present, increased in intensity. The homosexual wife submits to marital relations; the homosexual husband is impotent as a result of disgust, which operates as an inhibitory idea; or he is but temporarily potent when he succeeds in thinking of his wife as some beloved male person.

Pleasure and health are possible for the contrary sexual individual only in sexual relations with the same sex. In woman, this is obtained in *amor lesbicus;* in man, in simple embrace.

The depth of congenital contrary sexual feeling is shown, among other things, by the fact that the lustful dreams of such patients have to do with lascivious situations with males or *vice versa;* and also by the fact that in the third and fourth degree of sexual degeneration the feeling of shame is shown only toward persons of the same sex.

Contrary sexual feeling may also occur as an acquired abnormal phenomenon, either episodically or lastingly. It would seem that even in these cases a taint were necessary. The exciting cause in my cases has been neurasthenia due to onanism. Such patients during the age of possible procreation were impotent, experienced aversion and shame toward the opposite sex, reproached themselves for attempts at natural relations, and refrained from them. Intense libido and accidental associations led them to sexual relations with persons of the same sex that were pleasing to them. Such cultivated cases of contrary sexual feeling are much inclined to active pederasty.

(d) Paradoxia Sexualis.—In the early years of childhood, and therefore long before the anatomic development of the organs of generation, sexual feelings and impulses may occur which then lead to onanism—so detrimental to the mind and body. Premature development of the sexual instinct probably occurs only in tainted or degenerate individuals. That irritation of the genitals in normal children as a result of balanitis, oxyuris, etc., may lead to onanism is well known to neurologists and pediatrists.

Not infrequently in the aged whose vita sexualis has long become extinguished and whose genitals have atrophied, there is a reawakening of libido. This phenomenon depends upon organic changes in the cerebral cortex (dementia senilis). In such cases impotence leads to satisfaction of libido in unnatural acts with children, in sodomy, and in other horrors to which lowered moral tone and defective intelligence lend their aid.

2. Impulsive Acts.

Within the domain of psychopathology there are acts the motives of which lie in ideas that are not clearly conscious. Under such circumstances the idea which impels to an act, even before it has been raised to complete clearness above the threshold of consciousness, is transformed into the act, or it never becomes perfectly clear in consciousness. Thus the action appears to the actor as it does to a second person,—without motive and therefore incomprehensible. It has a surprising effect upon the subject himself.

It appears as an organic necessity arising out of the unconscious mental life, and is comparable to a convulsion in the psychomotor sphere.

Such an act is immediately related to the acts which result from affects; it differs from these, however, essentially in this: that it is not simultaneous with an affect, even though frequently it is not devoid of an affective foundation. At least it points to an abnormal excitability of the psychomotor apparatus, in that here an idea in a quasi-nascent state is sufficient in itself to be transformed immediately into action without the exercise of will and consciousness.

Such a phenomenon in the highly organized sphere of the central nervous system seems to indicate a low degree of activity of a mechanism capable of higher functions, and it gives rise to a suspicion of a degenerate foundation; in fact, these impulsive acts occur only in degenerate insanity (Morel).

Most prominent here are the hereditary degenerate cases, especially those occurring in relation to the hysteric and epileptic neuroses, and those that have been acquired by drink, onanism, and grave injury to the brain (trauma capitis).

The psychic energies which impel to action are lively organic feelings, especially those of a sexual kind which often appear in perverse form, and lead to violation, with murder and mutilation of the victim, and even to anthropophagy; or they are affective emotions (depression, weariness, homesickness), not infrequently induced and intensified by a disturbed state of general feeling, neuralgia, etc., which call up annihilating impulses that may be directed either against others or against self.

At the instant of the deed the idea, though previously dark, may come like a stroke of lightning in the form of an imperative hallucination or a vision of blood, red flames, and the like; enter consciousness; and become the directing force to an act, such as burning, murder, etc.

In other cases the organic impulse (sensual feeling) awakens an inherited or acquired impulse and leads to its logical expression (kleptomania, drunkenness, etc.) (Schüle).

Such impulsive acts, of which perverse sexual acts—rape, suicide, murder, and arson are the most important, classified with those due to melancholic despair, to imperative ideas, or to maniacal impulses that are pathologically intensified or beyond inhibitory control—have afforded the material for the creation of the erroneous theory of so-called monomanias.

3. Psychomotor Disturbances.

These are motor acts which possess all the features of voluntary acts, or which at least have their origin in the psychomotor centers of the brain, but arise without the influence of the will and depend upon inner organic irritative processes.

(a) The Impulsive Restlessness of the Maniacal.

At the height of mania the patient is in constant motion. He talks, sings, cries, dances, jumps, and destroys everything in reach until he is temporarily exhausted. These movements are apparently voluntary; they seem to be true voluntary acts, but close observation shows that they are devoid of the influence of the will and result without consciousness of purpose,—indeed, even without consciousness at all; they have the character of automatic, impulsive, forced movements.

The cause of these movements is not clearly conscious ideas that have a root in mental interest or sensory perception, and thus impel to an act; but here we have to deal with direct inner organic processes affecting the psychomotor centers, which, owing to the greatly increased ease of psychic activity, are transformed into movements, without the motives of movement becoming clear ideas in consciousness.

This kind of movement is purely automatic, though it seems to be voluntary, because the stimulus affects a sphere of the psychic organ, which under normal circumstances is accustomed to react only to voluntary impulses.

There can no longer be any doubt that the impulse to movement in the maniacal is an irritative phenomenon in the sensorimotor cortical areas of the forebrain, which has nothing whatever to do with volition. There is a difference of opinion only concerning the significance of the process, either as a sensory or a motor irritative phenomenon.

Mendel thinks that the motor centers are in a state of increased irritability, so that the slightest stimulus induces intense and extensive reaction (motiveless muscular movements); Meynert regards the symptoms as an irri-

tative phenomenon of a sensori-hallucinatory character. By him the impulse to movement in the maniacal is looked upon as induced by hallucinations of the muscle-sense and by hallucinatory feelings of innervation. According to him, the areas for the feelings of innervation (the sensorimotor cortical areas of the forebrain, which without doubt contain memory-pictures and ideas of movements) are affected by hallucinations. According to this theory, the impulse to movement could not be especially motor, but a sensory irritation. Meynert bases his opinion, which is, at any rate, justified, upon the facts that all movements may be ultimately referred to sensation, and that the cortical cells have but one functional peculiarity: the capability of sensation.

Under all circumstances the impulse to movement in the maniacal is the product of excitement which results from the abnormal process going on in the psychic organ, and therefore it is not functionally and psychologically induced; thus it is analogous to primordial delusions, imperative ideas, hallucinations, and abnormal states of feeling that are not caused by external events.

The abnormal organic process calls up memory-pictures of earlier movements, which, because of their organic physiologic origin, are especially intense. The area of the cerebral cortex that is abnormally excited reacts with the greatest ease to irritation (idea of movements), and transforms it immediately into a corresponding muscular act; and that the easier, since in the psychic mechanism of the maniacal all possibility of inhibition has been removed.

It was formerly generally supposed that the maniacal person developed more muscular power than one in the physiologic state, as a result of which, to the detriment of the unfortunate patients who were therefore the more feared, they were loaded with chains and kept in prisons.

This opinion is physiologically untenable. It is, indeed, true that the maniacal patient sometimes performs acts of strength which a healthy person seems incapable of; but this overproduction of muscular power is only apparent. This is to be explained by the recklessness of the patient, who in his disturbed state of consciousness perceives no danger, no feeling of dizziness or fatigue, and is therefore capable of using up all his muscular power; just as a healthy person in a state of despair, or in the face of death, may perform unusual feats of strength. However, if the absolute amount of strength is not increased, still the duration of muscular activity far exceeds that which is normally possible. A maniacal patient is capable of jumping, dancing, running about, and storming all day long without getting tired, unless he be overcome by exhaustion; a simulator cannot keep this up an hour. The reason for this is that in the truly maniacal there arises no feeling of fatigue (muscular anesthesia, disturbed apperception in the organ of consciousness); but especially because, while in the normal individual all these acts and movements must be called up by the will, in the maniacal the will is excluded and the acts are a product of spontaneous excitation.

Should the result (muscle-work) be the same, still there is a great difference in the two cases, whether activity of the central nervous system is a voluntary psychic phenomenon or a spontaneous and automatic process. We see the same thing in the hysteric, hystero-epileptic, and choreic, who all day

long expend muscular strength in the form of convulsive movements without becoming tired or exhausted. Apparently, voluntary and spontaneous muscular activities are not identical; and it would seem that it requires many mechanical spontaneous expenditures of force to be equivalent to one act that is psychic.

This is also shown in trophic relations, in that the maniacal patient, in spite of constant movement for weeks at a time, in spite of sleeplessness, insufficient nourishment, and increased loss of body-heat, does not suffer the same loss of weight that the healthy person must suffer under approximately similar conditions of activity.

(b) Psychic Reflex Acts in Melancholics and the Delirious.

Fundamentally different from this impulse to movement in the maniacal, though outwardly corresponding with it for the most part, is the excessive movement seen in certain phases of melancholia (activa) and in the delirious. The melancholic patient also under some circumstances destroys and raves, but his activity is psychic reflex movement, conditioned by painful states of feeling, especially precordial distress; and therefore the intensity of movement is absolutely dependent upon the intensity of the emotional state. This motor unrest in the melancholic and delirious, owing to its reflex origin in painful states of feeling and in conscious, frightful hallucinations and deliria, differs from the purely automatic action of the maniacal; it is analogous to the acts, often purposeless and destructive, that are committed, as it were, instinctively, by those enduring torture, as a result of the physiologic affect of despair, in order to bring about a lessening of inner tension and thus experience a diminution of painful states of feeling.

(c) Imperative Movements in States of Mental Weakness.

Certain imperative movements are not to be confounded with the phenomenon of the maniacal impulse to movement. These are observed in states of mental weakness. In the first place, the uniformity of these movements prevents such an error. They are of a combined nature (striking oneself, walking, pulling, rubbing, etc.), repeated interminably, and the individual seems absolutely unconscious of them. Originally they are probably awakened by sensations, delusions, or hallucinations, and voluntarily performed; but gradually they become a habit, and, with the disappearance of the original conscious impulse which induced them, they are automatically continued; just as are certain peculiar movements like associated movements and gestures in the sane, which, once acquired, finally become a second nature: *i.e.*, unconscious.

(d) Tetany.

In this condition the muscles are tense, in a state of slight flexor contracture, which, when the patient is taken hold of, as must be done, owing to the state of passivity, is increased until the resistance offered is enormous; and this can only be overcome by the exertion of a certain amount of force on the part of the examiner. Of course, the patient offers some active resistance to such attempts to carry out passive movements, but he is scarcely conscious of this resistance, which may, in some cases, be due to the cloudy inimical or painful impressions derived from the external world.

This phenomenon is always limited to the flexors, adductors, and pronators; the extensors are never affected.

As most appropriately described by Arndt, at the height of this condition the patient is drawn up into a ball, with head bent, knees pressed on the chest, back curved, shoulders drawn tight together, the upper arms pressed to the sides and the forearms to the chest, and even the nails are pressed into the palms. The thighs are pressed together and held close to the abdomen, the legs bent up to the thighs. Along with this there is a tense, painful mien, wrinkled eyebrows, contracted and protruding lips, with the folds of the chin pressed together. This is the classic picture. Frequently only the facial muscles and the flexors of the head, or of the hands and fingers, are affected. Unquestionably here there is an irritation in the psychomotor centers; whether it is direct or the result of a sensory reflex, as Schüle supposed, remains undecided.

This tetany occurs in melancholia and in states of dementia following it, and always indicates severe irritative processes and grave states of disease. In pronounced and lasting cases there is always a a deep disturbance of consciousness and apperception.

(e) Catalepsy.

In this condition the muscles do not exhibit the rigidity and contracture seen in tetany. They offer no resistance to passive movement, but maintain for a long time the position originally taken or imparted to them.

The patient is not capable of changing his position voluntarily; it is the gradual effect of the weight of the limbs which finally brings them into another position. Here the limbs may exhibit that peculiar wax-like flexibility, as a result of which, like a wax figure, they maintain the position in which they are placed (catalepsy vera); or the fingers, after being bent, snap back, as it were, into the extended position (catalepsy spuria).

The cataleptic condition occurs as an attack and is transitory, or it is continuous. In the latter case it is always associated with a deep disturbance of consciousness. In the cataleptic state there is cutaneous and muscular anesthesia. The lack of muscular feeling combined with the disturbance of consciousness removes the sensation of pain from fatigue, and thus makes it possible for the patient to remain in the most uncomfortable position. Nevertheless, owing to the fact that with the actual absence of conscious innervation the limb does not immediately obey the law of gravity, there is an indication of an automatic or reflex continuous innervation of the cataleptic muscles which has its origin somewhere in the cerebro-spinal path (tegmentum). Probably strong peripheral sensory stimuli induce the cataleptic state.

Schüle looks upon the phenomenon as a reflex inhibition in the psychomotor sphere, conditioned by effectual (principally sexual) sensory stimuli, in connection with weakened cortical function (great brain anemia), and also associated with a neuropathic constitution, due to heredity, onanism, uterine disease, etc.

Catalepsy also points to an intense degree of the disease when the mind is affected. It occurs in the melancholic, hysteric, and epileptic; also in mania and dementia.

4. Disturbances of the Will.

The sphere of the will presents many abnormal phenomena in the insane, which necessarily result from the abnormal feelings and emotions, and from the anomalies of thought, both in its formal processes and its content.

First must be mentioned the seemingly anomalous fact that the insane frequently speak rationally, or at least without revealing any delusion, and still commit the most nonsensical acts, which they are capable of excusing with ingenuity. The frequency of such cases has led to the classification of them as so-called *reasoning insanity*.

The explanation of this peculiar phenomenon is the following: There is no delusion, but the process of thought is formally disturbed. It is in some way so increased that no reflection is possible concerning the concrete act to which an idea gives rise. This is the case in the maniacal. Any thought is at once expressed in the corresponding act,—*i.e.*, without having been tested and compared with opposing motives,—and therefore the act must necessarily have the character of thoughtlessness or haste. Afterward the patient is able to excuse the act which he himself sees to be unusual, and thus he gives a reasonable motive for it; and, owing to his abnormal intensity of thought, he is never embarrassed. In other cases the perverted act is the result of an imperative idea, the transformation of which into an act the patient is no longer able to prevent; or the patient is in such an emotional state that ideas no longer enter consciousness with perfect clearness, or at least are no longer subject to reflection (psychic reflex acts, impulsive acts).

In many cases of apparently undisturbed intelligence where perverted acts are manifest, full intelligence exists only in appearance. There are de-

lusional ideas that form the motive of perverted acts, but the patient is able to conceal or dissimulate them. For this reason, then, the kind and manner of volition and action of a patient are diagnostically important, since they may indicate other elements of disease.

That the insane are able to act with design and reflection is a matter of surprise to the laity; but it is due simply to the fact that the logical mechanism of judgment is still at the command of the patient as long as general loss of psychic functions has not occurred (confusion, dementia).

In insanity the will can be abnormally changed only in two ways. It may be lessened to the extent of absolute absence of it, or it may be increased beyond all limit.

(a) Conditions of Diminished Volition occur in dements and in melancholics. In the former such conditions are the sad result of loss of all mental and ethic interest, and of emotional indifference and diminished sensory apperception. In such cases—for example, in apathetic dementia—there may be even complete loss of ideas. Under such circumstances there must also necessarily be an end of volition. There remain only the functions of instinctive life, and even these may become limited to the satisfaction of appetite for food (abulia).

The lack of volition in melancholics (anenergy), though it be an external passive expression exactly like that of the dement, has an entirely different foundation. It is possible that in these cases there is virtually a very lively will, but its expression is impossible owing to the multitude of inhibitory influences. These may depend upon the following:—

1. *Consciousness of the impossibility of attaining that which is desired.* Volition is a conscious desire in which that which is wished for is thought of as unconditionally attainable. The melancholic in his state of lowered sense of self, his changed general feeling (weakness), puts no more trust in his power to attain what he wishes, and therefore ceases to entertain desires.

2. *Feelings of displeasure.* The psychic activity necessary for action is associated in the patient with psychic pain and unpleasant feelings; therefore mental activity ceases; just as in cases of physical pain, like neuralgia, the sufferer instinctively avoids moving the affected part.

3. *Peculiar inhibition of the psychic mechanism.* There is an increased difficulty in the transformation of ideas into motor acts which may be looked upon as inhibited activity in the psychic reflex arc, or as an increased reflex inhibition. Under such circumstances the idea is not powerful enough to act as a motor stimulus. The patient, in whom one sees how painful this inhibited state of psychic tension is, makes every effort to carry out the desired movement, but he does not succeed,

or only imperfectly, in performing it. In states of violent emotion (intensification of the stimulating influence of ideas), however, the motor sphere is temporarily free, and in his acts the patient is, perhaps, even more wild and stormy than the maniac.

4. *Disturbances of association.* Sometimes in the melancholic the lack of volition is nothing but lack of decision, depending upon contradictory ideas which continually inhibit and disturb the idea which impels to action. The patient, impelled first in this direction and then in that by the increasing and decreasing effect of opposing ideas, is unable to come to any decision, and becomes involved in constant doubt.

5. Finally there are cases where the will is disturbed in its expression merely as a result of *delusions* or *hallucinations.* Thus, for example, a patient may stand in one spot because he has the delusion that his legs are made of glass or wood; or because he thinks he is standing on the edge of an abyss; or because voices have commanded him not to move or speak, or he will be lost.

(b) UNLIMITED INCREASE OF VOLITION (hyperbulia—Emminghaus) is found in maniacal states. The causes of this are to be looked for in the following conditions:—

1. In the abnormally *increased feeling of self,* which induces continuous excitation arising out of the feeling of increased physical and mental capabilities, and makes everything seem attainable.

2. In the *loss of all inhibitory regulating and controlling ideas* of use and purpose, which in states of quiet emotion and moderate activity of thought are always at the command of the sane and control their voluntary acts.

3. Owing to the pathologically intensified change of ideas and the facilitated association of them, there is an abundance of motor motives which contrasts with the monotony of thought and the slowness of association in melancholics. These ideas are also extraordinarily colored by intensity of feeling.

4. But also the *transformation of ideas into motor impulses is decidedly facilitated.* This is shown in the great ease and promptness with which the motor apparatus reacts to motor motives.

This pathologic phenomenon may be regarded as a facilitated expenditure of the tension relations of ideas—as an increased impressionability of the psychic organ. But it is also conceivable that this increased reflex excitability could arise only from the diminution or absence of a reflex inhibitory influence, exercised by higher centers which subserve the processes of reasoning reflection, upon certain psychomotor centers; just as the spinal cord is subject to the inhibi-

tory influence of the cerebral hemispheres, and an increased reflex excitability occurs when this influence is lessened by sleep or abnormal cerebral conditions.

Owing to this disturbance of the will, the acts of the maniacal seem to lack reflection, and appear strange, foolish, or whimsical.

5. Disturbances of "Free" Will.

Insanity removes the possibility of free will. This fact is recognized by the laws of all civilized nations.

Free will is impossible in the insane for the following reasons:—

(a) As a result of brain disease; and therefore as a result of organic causes, spontaneous affects, passionate feelings, impulses and desires, delusions, and errors of the senses become causes of acts.

(b) Because the motives, no matter how they may have arisen, which impel to an act are unopposed by any moral or legal restraining ideas; since (1) the latter, as a result of the brain disease, like other higher psychic powers, are either lastingly lost (states of mental weakness) or are temporarily wanting (transitory disturbances of self-consciousness); or, (2) owing to the formal disturbance of thought as a result of disease, they cannot enter consciousness (melancholia, mania).

(c) Because subjective and objective consciousness is falsified by delusions and hallucinations. This disturbance may go so far that the whole former personality is changed into a new and abnormal personality (paranoia); so that the action is that of a psychic personality entirely different from the previous personality of the individual—legally the person is the same, but psychologically he has become another.

CHAPTER V.

Disturbances of Consciousness.

Consciousness, which is made up of the content of ideas present in it in a given unit of time, is not a constant quantity. In accordance with the degree of clearness of ideas there are various degrees of clearness of consciousness.

The highest degree of consciousness is represented by so-called self-consciousness: *i.e.*, a condition in which the thinking individual is completely conscious of his thinking activity. It presupposes the simultaneous existence of undisturbed sensory perception subject to the will (attention); and of undisturbed reproduction from the storehouse of memory. Since the ego is clearly conscious of the processes

that are taking place, it involves consciousness of personality; since ideas always occur with reference to a sense of space and time, it also involves world or space consciousness and consciousness of time.

Along with this world of self-conscious mental life, and connected with it by many transitions, there is an unconscious psychic life that is infinitely more extensive and important than the conscious mental sphere.

This unconscious sphere of psychic life is continuously in activity; it elaborates into feelings the stimuli which the sensory nerves from all parts of the body bring to the cerebral cortex; it regulates the movement (locomotion) initiated by an act of self-consciousness (will), and makes it possible for the act to be carried on automatically quite as promptly and certainly as when guided by the will.

It elaborates the ideas excited physiologically by the processes of nutrition and tissue-change in the ganglion-cells of the cortex, to thoughts, impulses, etc., and complicated psychic processes, the complete result of which presents itself to self-consciousness in the form of opinions, judgments, and emotions.

It is to this unconscious activity that we owe our mental individuality, our psychic disposition, our ideas and impulses. It is infinitely more important than the activity of our self-conscious ego. Under pathologic conditions it may happen that this activity of the unconscious brain mechanism, whether it be in the form of sensory reproduced ideas or in motor impulses, does not reach consciousness (it remains, then, unconscious); or it is apperceived in some roundabout way, as in hallucinations, or as a completed impulsive act.

The cause of this disturbance lies in abnormal changes in the organ of consciousness, which may even go to the extent of absence of the functions which belong to it (attention, reflexion, voluntary reproduction, etc.).

Then the activity of the unconscious brain mechanism is absolutely lost to self-consciousness—afterward the individual knows absolutely nothing of what he has thought or what has happened (amnesia); in other cases self-consciousness is able to recognize nothing of the manner of origin of what has been unconsciously done—it seems to be something which belongs to another ego (division of personality as it occurs in demonomania and paranoia), or as something that has been called up in the external world (hallucinations which are not recognized as such).

This activity of the unconscious sphere may be congruently combined, and consist of hallucinations, delusions, and complicated acts, and thus seem to resemble the ordinary manner of expression of self-conscious life. However, that it was not self-conscious is proved by the amnesia which exists afterward for all these unconscious acts; for it is only those psychic activities which take place in the sphere of self-consciousness which leave behind them traces of historic consciousness: *i.e.*, memory.

A great number of symptoms which occur in insanity (many feelings, affects, delusions, acts, and hallucinations) are only to be under-

stood with the assumption that they are unconscious products of the spontaneous brain mechanism which have either not been illuminated by the light of self-consciousness or, if this has occurred, were not recognized as due to unconscious activity of the personal psychic mechanism.

In insanity disturbances of consciousness play a most important rôle, since they cause grave defects in the patient's power of criticism of the emotional states, deliria, subjective perceptions, etc., due to the disease-process, and thus lead the patient into delusion and error.

A disturbance of consciousness as an integral function of the cerebral cortex is to be expected in every psychosis. In fact, this is the constant characteristic in the play and clinical abundance of symptoms. In every empirically true picture of psychic disturbance, and included in the combination of elementary disturbances, there must be a peculiar kind of disturbance of general self-consciousness, in accordance with the peculiar manner in which the psychic processes have been subjected to losses, inhibitions, etc. Thus, in this sense, one may speak of melancholic, maniacal, and paranoiac states of consciousness (*vide* "Special Pathology").

The abnormal changes of consciousness of personality are of the greatest clinical interest.

Thus, we meet grave disturbances of consciousness of time and place, which bring about a cloudy mental existence, in severe degenerative brain diseases (dementia paralytica and dementia senilis).

There are patients in whom the previous healthy period of their lives has quite disappeared from consciousness, or at least seems to belong to another personality; so that the patient dates his existence only from the time of the beginning of his disease, or from a particular date during the disease (origin of a new ego representing the delusions).

Indeed, there are cases where consciousness of personal psychic existence entirely disappears, and the patient looks upon himself as an object, and therefore speaks of himself in the third person. In such cases, along with the psychic transformation, there are profound disturbances of general sensibility, anesthesias, which not infrequently give rise to the delusion of being dead.

Still more interesting are those cases in which, along with the abnormal ego, fragments of the former personality have been retained; or in which the latter has been broken up, as it were, into several personalities that are subject to the dominate circle of false ideas (multiple ego, division of the personality).

In the latter case there still exists at least a continuity of consciousness which is only changed in content; there are not two persons,

but it is the same individual having different circles of ideas. The various egoes are still necessarily held together by the unity of body-sensibility and the consciousness of the continuous series of the psychic phenomena in time.

In some rare cases this connection is also wanting: episodically the patient is entirely a different personality. Owing to the fact that no rays of consciousness pass from the period of healthy mental life into the period of disease, and also owing to the fact that during the insane period no traces of memory are left behind, the patient lives a completely double existence, and presents two sharply differentiated personalities in time (double personality, alternating consciousness, double mental life). Such conditions are, for the most part, observed in females in connection with the development of puberty and as one of the symptoms of an hysteric neurosis. They are very closely related to spontaneous somnambulism.

Consciousness of the disease also depends upon the degree of disturbance of consciousness. The feeling of being mentally diseased is more frequently present than is usually supposed. Not infrequently there is an anxious feeling of threatened loss of mind long before the oncoming of actual disease, especially in individuals that are hereditarily predisposed.

In the initial stages of melancholia this feeling is usually well marked, and not infrequently this is the reason why such lucid patients often request to be admitted to an asylum. In mania, also, even at its height, the patient is frequently well enough aware of his trouble, and he excuses his perverse and impulsive conduct by saying that he is a fool, and therefore everything should be allowed him.

In the later stages of insanity, where systematic delusion or mental decay has developed, the patient is absolutely without insight into his abnormal condition, even when he is able to recognize correctly the insane condition of his companions; and thus it happens that such patients are constantly complaining and demanding that an end be made to their unjust detention. In states of convalescence insight into the disease-state is one of the first symptoms of returning health.

As special elementary forms of disturbance of consciousness in the insane, aside from forms of somnolence, stupor, coma, etc., described in general cerebral pathology, there are still to be mentioned:—

1. States of psychic cloudiness. In these conditions ideas do not reach complete clearness in consciousness; consciousness of time and space, as well as that of personality, is decidedly clouded; apperception of the external world is weak and fragmentary, and takes place as

through a veil. Memory of the events of this state is only summary. Such cloudy states of consciousness occur in epileptics between attacks, and after them, but also as temporary states without any relation to attacks; finally, in the course of chronic alcoholism, dementia paralytica and dementia senilis.

2. Dreamy states of waking life. In these conditions consciousness is disturbed even to the extent of loss of self-consciousness (unconsciousness in the forensic sense); consciousness of the external world and of the personality is extinguished, or at least reduced to a minimum of clearness. Sensory stimuli do not penetrate the sphere of self-consciousness; sensations are not elaborated clearly to conscious perceptions. The condition resembles that of one in a dream, only with the difference that the psychomotor sphere is not inhibited; so that the ideas (deliria) which arise as a result of inner excitation and the hallucinations are expressed in motor acts, and may become the motive of dreamy action, of which, however, the actor is as unconscious as he is incapable of recalling them afterward.

Here also belong certain states of inanition and febrile delirium, acute states of intoxication, forms of epileptic disturbance of consciousness, pathologic affects, and somnambulism.

3. Stupor. In this condition all the psychic functions are inhibited without, however, being entirely extinguished. Consciousness is clouded in so far as the ideas do not attain the clearness of normal life; apperception is cloudy, retarded, the flow of ideas is obstructed, and associations are slow. But the inhibition in the psychomotor sphere is pronounced. The patient is devoid of all spontaneity; stands for hours at a time in one spot, and the mien is expressive of indifference or of stupid astonishment. Voluntary movements are but seldom made, and then with evident difficulty and great slowness.

Along with the psychic inhibition and the interference with the reflexes there is, as a rule, inhibition of spinal reflex excitability, and also cutaneous anesthesia and analgesia. Innervation of the vegetative organs is also decreased; respiration is superficial and slow; the heart-sounds are weak; the pulse is poorly developed, small, and slow; peristalsis is lessened (obstipation); the circulation is weak (edema of the feet); temporary cataleptic states may occur.

Such stuporous states occur as postepileptic and postmaniacal phenomena; as episodes in dementia paralytica and paranoia, alternating with maniacal states (*vide* "Circular Insanity," "Special Pathology"); primarily and independently they occur after violent fright, great loss of blood, poisoning with carbonic oxide gas, and strangulation; as accompanying symptoms of melancholic states

(melancholia stupida); as expression of brain exhaustion after severe acute diseases (typhoid); also after sexual and especially onanistic excesses.

It seems possible that the common basis of these conditions is anemia of the brain, as a result of edema (strangulation), vasomotor spasm (fright, etc.), and inanition (typhoid, etc.).

4. Ecstasy. In this condition consciousness is dreamy and absorbed in inner events. It is narrowed to a fixed circle of ideas of spontaneous origin, which is associated with a lively affective state of feeling, and has a lively hallucinatory coloring. In this state of inner concentration the registry of impressions from the outer world and from the body at large is suspended, or limited to that which is immediately related to the dreamy ideas.

The psychomotor sphere is limited to a single direction of thought; the individual resembles a statue, and the muscles may temporarily present the condition of *flexibilitas cerea.*

Ecstasy occurs mainly in women, especially upon an hysteric foundation. Anemic states, uterine diseases, functional anomalies of the sexual organs on the physical side, and religious exaltation on the mental side are predisposing conditions.

Not infrequently it precedes hysteric convulsions, or follows them. Self-consciousness is entirely wanting or is very much clouded, and thus memory of the events of the attack is entirely wanting or is limited to a few reminiscences of the hallucinatory delirium.

CHAPTER VI.

Disturbances of Speech in Insanity.

LANGUAGE, as the means of expressing thought and as an immediate function of the cerebral cortex, presents important sources of knowledge for the alienist, not only in revealing the content of thought, but also in the manner in which it reveals it.

Language consists of gesture, speech, and writing.

The conditions necessary for intercourse by means of language, according to Exner, are as follows: 1. Hearing the words of others (if deafness does not exist). 2. Understanding of words (when word-deafness does not exist). 3. Development of associated thought which formulates the answer (possible so long as the formation of thought is not disturbed by mental disease). 4. Clothing the ideas which constitute the answer in words (possible, so long as there is no amnesic aphasia). 5. Transformation of the word-ideas into the corresponding motor ideas (possible so long as ataxic aphasia does not exist).

6. Transference of innervation-impulses in proper strength and co-ordination to the muscles of speech (possible so long as there is no disease in the cerebral motor tracts or the medulla).

In states of low mental development (congenital and acquired), language may be limited to gestures or sounds (idiots and dements) as interpreting affects or feelings.

At a higher stage of development the language of certain imbeciles stands on a higher plane. It is analogous to that of young children and parrots who are able to repeat what is said in their hearing,—the whole phrase or at least the last word (echo-speech). At a higher stage of development there is a word-speech for the designation of the most common and important necessities, which gradually also shows the beginning of grammatic form and of the formation of sentences, and becomes richer and richer, until it reaches the height of comprehensive significance. The highest expression of language is writing.

In accordance with this idea, language, both in content and form, is one of the most delicate indications of the content of consciousness and the capabilities of the psychic mechanism.

Without reference to purely articulatory disturbances of speech which find their description in special pathology (idiocy, paralysis, etc.), here we have to deal only with dysphasia and dysphrasia (Kussmaul), which are brought about by disturbances of the cerebral cortex.

1. DYSPHRASIAS are the most frequent. They may consist of anomalies of tempo, of form of speech, of syntactic diction, and of the content of speech.

(a) Increase in the rapidity of speech as an expression of facilitated thought and expression occurs in states of psychic exaltation, especially in mania (logorrhea, polyphrasia).

In this condition at the same time diction is facilitated, more flowing, and even brilliant (maniacal exaltation), until, with the ever-increasing flow of thought (flight of ideas) and the omission of connecting members, only disconnected words and even sounds cause reflex activity in the speech mechanism. Under such circumstances incoherence necessarily results (height of mania), and there is an end of grammatic association of words in sentences. Confusion of speech may also result from mere disturbance of association (confusion, affect); from a superficial similarity of the sounds of words associated in a train of thought (maniacal and paranoiac); from states of mental weakness in which words are, as it were, no longer anything more than mere hulls and are incorrectly employed (certain paranoiacs); and also from paraphasia. Such conditions are immediately differentiated from the incoherence of the maniacal by the slowness of speech.

Slow and even stuttering speech is observed in many melancholics and dements. In the former it is the result of the slow and inhibited thought, or of the disturbing influence of hallucinations and emotional states; in the latter, it is due to the incapability of forming a thought, as a result of mental weakness. Both disturbances may lead to complete dumbness (mutism), as observed in melancholia due to increase of inhibition, and want of reflex in the organs of speech (melancholia with stupor); in dementia as a result of lack of speech ideas (idiocy, deaf-mutism); in apathetic acquired dementia and stupor, where word-images have been lost.

However, mutism is often the result of delusions and imperative hallucinations (religious paranoia); sometimes it also occurs in hysteric insanity, as a result of the globus-sensation.

(b) Interesting anomalies in the manner of speech are presented by the pathetic speech of the ecstatic and of the exalted paranoiac (which are due to the superabundance of feeling and emotional excitement) dependent upon an increased consciousness of self; by the trivial, silly diction of certain paranoiacs and hebephreniacs, who use diminutives; and by the rhymed speech of the maniacal. Here should also be mentioned what Kahlbaum first described as "verbigeration," in which the patient pronounces words and sentences which have the form of speech, but which are absolutely without meaning and disconnected. Kahlbaum differentiates this verbigeration from the incoherent talk of the confused and demented, by means of the trivial content of the conversation of the latter patients, and from the speech of the maniacal by the progressive content of the latter: *i.e.*, the flight of ideas, which does not come back to the same connection of words, whereas the patient affected with verbigeration repeats the same words and sentences *ad infinitum*.

Frequent repetition of the same words may occur also as a result of psychic motives. Thus, for instance, one suffering with religious paranoia, out of special respect for the number "3," may repeat every word, spoken or written, three times. A patient of Morel repeated words frequently, owing to the hypochondriac delusion that she was losing her speech.

(c) Defects of syntax in diction occur in paranoiacs and dements. They consist in unusual association of words, in the substitution of nouns for verbs, or in the neglect of endings and conjugation; as a result of which the patient speaks as a little child, using indefinite nouns or infinitives or perhaps past participles; instead of pronouns, using nouns (*e.g.*, "Toni Blumen genommen, Wärterin gekommen, Toni gehaut"—Kussmaul).

(d) Finally of the greatest interest among the dysphrasias, along with poverty of speech in content and diction, is the formation of new words. This occurs mainly in paranoiacs, and very rarely in the maniacal.

This onomatopoiesis is, for the most part, of hallucinatory origin, or arises out of the impulse to form a new descriptive word for a new abnormal feeling or thought, or for what to the patient is the strange process of hallucination; because in ordinary language the patient is able to find no word to designate it. These newly formed words are essentially creations of the unconscious brain mechanism, like those which in physiologic states, both waking and dreaming, may be presented to consciousness in the planless association of senseless sounds.

2. Dysphasias.—According to Kussmaul's excellent classification, the aphasias occurring in brain diseases with predominating mental symptoms (traumatic, apoplectic, and paralytic insanity), and also not infrequently in epileptics, belong here. For the most part, the aphasia is amnesic, less frequently ataxic. At the same time there is frequently alexia, agraphia, and also paralexia and paragraphia, word-deafness, and word-blindness (dementia paralytica). The dementia that is usually coexistent makes it difficult to ascertain the presence of the aphasic symptom, the more since the patient himself is unconscious of his paralexia and paragraphia.

CHAPTER VII.

Psychosensorial Disturbances.

Among the most important elementary anomalies in insanity are the sense-deliria, or deceptions of the senses: *i.e.*, errors which arise in the sphere of the senses and as a result of sensory impressions (Hagen).

Since Esquirol, who was the first to investigate and study carefully these symptoms, it is usual to distinguish two phenomena: (1) hallucination; (2) illusion. The difference between these two lies in this: that in hallucination there is no external stimulus as a source of subjective sensory perception, while in illusion a stimulus coming from without, or arising spontaneously in the peripheral sensory apparatus, on its way to the organ of apperception is distorted, and thus reaches consciousness in distorted form.

1. Hallucination.

The person troubled with hallucinations sees, hears, smells, tastes, thinks, and feels with the complete certainty of an objectively founded sensory perception which has no actual objective foundation.

The process is decidedly abnormal. Since disease is nothing else than function under abnormal conditions, scientific investigation of this phenomenon must keep in mind function under normal conditions, and ascertain the deviations from the normal conditions.

The normal process of perception is made up of three acts:—

1. The reception of a physical stimulus from the external world by the end-organ of a sense-apparatus (retina, organ of Corti, tactile corpuscle), and the conveyance of this phenomenon of movement by the centripetal path of the sensory nerves involved.

2. The transformation of this mode of motion in the endings of the sensory nerves in the brain (organ of perception, center of sensation, subcortical center) into an elementary psychic phenomenon (sensation).

3. The conveyance of the movement that has been modified in the subcortical center by paths leading to the cerebral cortex, and thus to the central end-station of the sensory path (sensorial center, apperceptional center, ideational center).

If this latter end-station is in a certain state of functional excitement, which is called attention, and if it contains residua of former excitation (sensory memory-pictures), then the excitation reaching the cortical end-station calls up these residua. As a result of the combination of a memory-picture then awakened with the centripetal process, a perception takes place: *i.e.*, interpretation of a sensory impression in the sense of a memory-picture of an earlier impression, which, according to the law of eccentric projection, or reference to the place of origin in the external world, is projected into space. The whole of this complicated process of sensory perception is for us unconscious, and only the complete result of it, the idea, the sense-perception, enters consciousness.

The process of perception takes place, in accordance with the readiness and the functional capability of the center of apperception, with lightning-like rapidity, intuitively, or slowly and with difficulty.

If the memory-picture that has been called up or combined corresponds with the centripetal excitation,—*i.e.*, resembles that which caused the original memory-picture,—then the perception appears as individually correct and adequate. In the case of lack of resemblance the subject of the phenomenon is deceived with reference to his perception (psychic illusion).

Owing to the imminent capability of memory in the cortical sensory centers, the memory-picture of a previous perception may be called up into consciousness passively or actively.

Passive reawakening may occur organically as a result of spontaneous or reflex excitation; functionally, it may be the result of a new centripetal excitation in the sensory path, or of association of ideas.

Active reawakening is possible as a result of voluntary calling up of memory-pictures.

If the power of memory is intact, then the integrity of active reproduction is unchanged. Reproduction in changed form as a result of union with other memory-pictures is not possible in spontaneous reproduction.

A fundamental difference between memory and perception (imaginative and sensory thought—Sully) lies in the fact that the former, under ordinary circumstances, produces only an ideal, and not a sensory, memory-picture. It is probably due to this that consciousness is able to distinguish easily at all times memory-pictures and actual perceptions. The reason for this is only to be found in the fact that in the occurrence of the image of perception the whole sensory apparatus is involved, while in the reproduction of a memory-picture the sensory apparatus is not involved, or at least with less intensity than in the occurrence of the perception-image. When a memory-picture attains the intensity of a sensory perception (hallucination) the presumption arises that under abnormal conditions the sensory apparatus is thrown into a state of excitement outward from the center almost as intense as that which occurs when a real sensory perception, based upon physical stimuli from the outer world, is induced.

Owing to the deficiency of our knowledge of the functions of the various portions of the sensory apparatus, investigation of them is extremely difficult.

That the degree of intensity of memory-pictures is not insignificant is shown by the fact that the exciting causes for the occurrence of hallucinations may be said to consist essentially in the fact that they induce an intense excitation and concentration of thought. Functionally this is brought about by emotional states (fear, fright, enthusiasm); also by intensification of attention (expectation, lively interest in an object); and by want of external stimuli (darkness, isolation, etc.). The conditions obtaining in solitary confinement are especially favorable, where the emotions, pangs of conscience, and longing for freedom are present and call up lively memory-pictures; and where, besides, owing to want of external sensory stimuli, there is occasion for pre-occupation with imagination.

Hallucinations are actually not infrequent in solitary confinement. The organic origin of them is facilitated by lively memory-pictures, in so far as often, in diseases of the cerebral cortex, they are called up, not by the dynamic functional psychologic way of association, but in the organic physiologic way.

Among the inner organic irritative processes affecting the sensory areas of the cortex are disturbances of nutrition, which are easily induced by conditions that give rise to insanity; such as febrile diseases, states of inanition, and intoxication.

States of inanition (anemia) especially favor the occurrence of hallucinations (shipwreck, privation in deserts, exhaustion due to acute diseases or the loss of blood, in fasting ascetics, etc.).

But within physiologic limits there are great variations in the intensity of memory-pictures. Thus, it is well known that in youth the imagination is much more active than in old age; in the aged, especially, visual memory-pictures are very poorly reproduced.

There are individuals of bad memory, even of partially bad memory, as a result of original constitution, in contrast with others who reproduce sensory images with extraordinary clearness. The latter endowment is characteristic of artists simply as reproduction and also as fantastic transformation. It is

probable that the wonderful art of many celebrated actors, and the wonderful plastic descriptions of Goethe, Ossian, and Homer, depend on this. Probably the fineness of instrumentation and tone-color of the compositions of composers depends upon an especially fine and lively reproduction in acoustic memory. That such individuals of extraordinary sensory endowment are more easily hallucinated than those that are devoid of imagination and richer in abstract ideas will be admitted at once; indeed, their memory-pictures are sometimes so intensified voluntarily as to resemble plastic hallucinations (Goethe). These plastic thoughts (psychic hallucinations—Baillarger; pseudo-hallucinations—Kahlbaum), these lively inner voices, present easy transitions to hallucinations; and, on the other hand, observation of the insane shows that their hallucinations have not always, and only infrequently from the beginning, the intensity of actual sensory perceptions.

It remains questionable whether the most intense reproduction of a sensory memory-picture or powerful excitation of the center in the cortex suffices to lend to the memory-picture the sensory intensity of an image of perception: *i.e.*, to change it into an hallucination.

All our present knowledge of cortical physiology justifies the assumption that the sensory centers of the cortex are only places for the act of perception and the retention of corresponding memory-pictures. The memory-picture which has become intensified to plastic expression (hallucination) cannot be reproduced at any other point of the sensory apparatus. In the subcortical centers, as a result of spontaneous inner excitation, elementary sensory impressions (lights, colors, tones) may be reproduced, and may reach the intensity of actual sensations, but never forms, words, and complicated memory-pictures.

In order that a memory-picture may become an hallucination it is necessary that there be a functional simultaneous excitement of the whole centro-peripheral sensory path, analogous to that which takes place in the process of sensory perception, thus increasing its intensity.

The changed conditions are such that it is not an external physical stimulus, but an inner psychologic process that excites the sense-apparatus to activity. Sensory perception is a centripetal process; hallucination is a centrifugal process. Both have this in common: that, in accordance with the law of eccentric projection of perception, the cause of excitation in the periphery of the sensory path is projected into external space.

Thus the deception becomes complete, and can be recognized as such by the consciousness of the hallucinated individual only indirectly. In what this capability of the sensory path to react to a purely psychic ideational stimulus consists can only be the subject of conjecture.

We might think of this condition of increased impressionability as an hyperesthesia.

At any rate, the phenomenon is purely functional. In general, hallucination is more frequent in the so-called purely functional brain

diseases, in which also increased functional excitability is simultaneously observed in other functional domains. Thus is explained the frequency of hallucinations in functional psychoses, hysteria, epilepsy, chorea, etc. Such a functional change of the sensory path as the fundamental condition for the occurrence of hallucination is a postulate of experience; for otherwise hallucination would be an everyday phenomenon, since the conditions for the increase of intensity of a memory-picture very readily occur (emotion, attention, concentration, voluntary intensification of imagination). If these conditions lead actually to hallucinations, it allows the presumption of an abnormal excitability of the centro-peripheral sense-apparatus. That hallucinations may arise merely in the sensory centers of the cortex is shown by the following facts of experience:—

1. The disappearance of hallucinatory phenomena when the sensory center in the cerebral cortex is destroyed, with consequent loss of the memory-pictures (organic cortical disease, apathetic dementia).

2. The possibility of hallucination when the external sense-organs are completely destroyed.

3. The limitation of stimulation of the peripheral sense-apparatus, with its subcortical center, to the production of elementary subjective sensations (lights, noises), and the exclusion of images and words.

4. The content of the hallucination is largely in harmony with the content of thought. It represents visual ideas that have become plastic; auditory ideas that have the value of sounds. It is only in this way that we can understand how hallucinations of like content sometimes become epidemic among persons who are pre-occupied with the same circle of ideas, and thus are placed in the same state of emotional excitement.

However, the content of thought and the content of an hallucination are not always congruent. In order to understand this fact it is necessary to ascertain in what ways memory-pictures that become hallucinations may be awakened. The relations are quite analogous to those which exist in the origin of a purely ideational image—like a delusion *(vide supra)*. The awakening of the memory-picture which becomes an hallucination may occur spontaneously, through a physiologic organic path, or as a result of association. In the first case it is not at all necessary that the memory-picture be a conscious one. At the moment of its awakening it may become active; so that the individual is conscious of it only when it appears as an hallucination.

The source of excitement may be direct, such as an irritation in the sensory cortical center. It is also possible that this excitement is

the result of excitation in the peripheral sensory path, or the result of excitation in some visceral sensory path, that has been carried to the center.

The memory-picture that has arisen as a result of association, and become an hallucination, as a rule arises consciously, and thrusts itself into the process of concrete conscious thought. However, it is not necessary that it appear in the original and identical form; more frequently it appears in a form that is fantastically changed. It may be awakened by an associative reproduced idea, by a sensory perception, or finally by another hallucination. In the latter case it is customary to call the secondary hallucination a reflex hallucination (Kahlbaum). The content of an hallucination may be stable (a constant associative memory-picture as the result of concentration, emotion, or constant excitation following an organic or peripheral stimulus of a certain quality), or the content may be kaleidoscopic.

In some infrequent cases hallucinations are limited to one eye or one ear. In such cases we are dealing with illusions, or at least with stimuli that are conducted to the sensory center from the given sensory path involved. However, an organic one-sided stimulus in the cortical center is possible.

Whenever images that have arisen in the psychologic way of association of ideas continue in consciousness and are capable of exciting the sensory center to the extent of inducing hallucinations, it must be concluded that there exists a high degree of hyperesthesia of the centro-peripheral sensory apparatus.

Examples of this are presented by patients who think that they hear spoken what they read or think, or who complain that their thoughts are spied out and read by others.

Many of these phenomena should be called pseudo-hallucinations; this is especially true of those cases in which the patients are conscious of this inner subjective origin of the hallucinations, and speak of them as thinking aloud, like Leuret's patient ("It is something that works inside of my head").

The nosologic significance of an hallucination is that of an elementary disturbance of the psychosensorial functions. It always indicates an abnormal condition of the central nervous system. It occurs most frequently in insanity, but it is not, in itself, a criterion of mental disease.

The psychologic significance of an hallucination is that of an actual sensory perception. To the hallucinated person it does not seem merely so, but he sees, hears, tastes, and feels with an intensity equal to that of a sensory impression induced by an actual object. It is of

decisive importance what becomes of the subjective sensory perception, of the elementary disturbance: whether it be recognized as an hallucination by consciousness or, not being recognized as such, lead to a falsification of consciousness.

The result is dependent upon the condition of consciousness in general and the integrity of the other senses. Correction is the rule in those that are not insane. Intact clearness and attention, and the perfect activity of the other senses and their healthful testimony, almost necessarily lead to a correction of the sensory image. It is psychologically interesting to observe the disturbing influence of a seemingly supernatural phenomenon, even on those mentally sound and familiar with it.

As a rule, in the insane the hallucination is mistaken for an objective sensory impression, since self-consciousness is here disturbed, emotions disturb the clearness and quietness of reflection, and frequently hallucinations of other senses coexist; so that a subjective sensory perception of some other sense comes to its support, while, at the same time, the paths for correcting and controlling sensory perceptions are pre-occupied.

It also happens that even insane persons correct their hallucinations. This occurs principally when the hallucinations affect but one sense and are of infrequent occurrence; when they are unaccompanied by emotional states, when the individual belongs to the educated class; and when the hallucination consists of the momentary plastic expression of a corresponding thought or of words that are read.

However, the thoughts which provoke hallucinations seem to be, for the most part, produced by spontaneous non-associative brain excitation; or at least they are not recognized in consciousness by the patient before they take the form of an hallucination. Thus it happens that the content of an hallucination does not correspond with conscious thought, is looked upon as something foreign, and its cause is placed in the external world.

This calls up a not unimportant practical question: namely, whether hallucinations that are not recognized as such are signs of insanity. There are authors, especially among the French, who have not hesitated to answer this question in the affirmative, but without justification; for, in the first place, an hallucination, even when it is regarded as an actual fact, is only an elementary phenomenon that reveals nothing concerning the general state of the individual, and nothing concerning the condition of the brain; and, in the second place, experience offers us examples of many persons who have believed in the reality of their hallucinations, but who could not be regarded as insane (Mohammed; Napoleon; Socrates, who conversed with his demon; Benvenuto Cellini, who, while he prayed in prison that God might let him see the light

of the sun once more, had a vision of the sun; Pascal, who saw an abyss before him; Joan of Arc; Luther, who threw his inkwell at the devil, etc.).

The explanation of this is not difficult, when it is remembered that such hallucinated persons, controlled by the delusions and superstition of their time, or by the tendency to the belief in wonders and mysticism, were not disposed to correct these creations of their imagination.

But nevertheless we must hold fast to the fact that hallucinations that are held to be true are manifestations that endanger the integrity of relations to the actual external world.

Simple as it seems to establish the hallucination as such, it may still be very difficult to keep from confounding it with other abnormal phenomena that occur in insanity. Without doubt, many manifestations are held to be hallucinations that are not.

Some of these are:—

(a) Dreams of many paranoiacs, who, in their fancy, are like the actor, and feel themselves to be in the rôle or in the situation to carry out dialogues without seeing or even hearing an actual person (Hagen).

(b) The reproduction of dream-pictures and their transference into the waking state as actual events. This defect of discrimination is observed in states of mental weakness.

(c) The confounding of an idea that has thus arisen with the supposed memory-picture of an actual perception. Here belong those cases in which the patients declare that some one has said this or that about them, insulted them, while, in fact, they only imagine this for the moment. The statements of such patients differ, in their lack of definiteness, from the content of actual hallucinations (Hagen).

Signs that with much certainty point to the existence of hallucination are: breathless listening for sound expected from a certain direction; a stare directed to a certain point; stopping the ears and covering the face.

Many patients, without being asked, will tell of their "voices," and designate the process of hallucination with a peculiar name.

The formation of new words, silence, and refusal of food are symptoms that are very frequently induced by hallucination.

It remains to allude briefly to the social and historic significance of hallucinations.

There is hardly a phenomenon of human life which, throughout the ages, has been more variously judged by the church, philosophy, and natural science. The history of hallucinations contains a part of the history of the civilization of all peoples and all times, and is a mirror of religious opinions.

Hallucinations have caused the most important historic events (visions of the cross of Constantin the Great), founded religions (Mohammed), and led to the most horrible errors in the form of superstition, ghosts, and persecution

of witches. They are of the greatest importance as giving origin to folklore and fables (belief in fairies, ghosts, elfs, devils, etc.); and it is not accidental that such stories have, for the most part, arisen among the peasants, shepherds, and hunters: *i.e.*, in men whose life, in most immediate contact with Nature, exercises a most powerful influence upon the imagination.

A good example of this is presented by the "second sight" of the Highlanders, consisting in the belief that certain nervous persons have the gift of seeing others in future states, as upon the bier: things which may, of course, incidentally become true.

The ominous appearance of one's own form is of the same nature (Goethe's gray vision of himself as he rode to Drusenheim).

Finally, hallucinations are very frequent in the history of the cloisters, where nervous disposition, chastisement, lack of sleep, intense concentration of thought on a few ideas, with consequent increase of imagination, and, perhaps, also onanism, tended to provoke them.

Hallucinations have a most powerful effect in poetic creations, and therefore poets, either conscious of the psychic significance of hallucination or instinctively, when they wish to make a powerful impression, make use of hallucination. The vision of Macbeth, in Shakespeare's drama, when Macbeth finds his place at the table already occupied by the ghost of the murdered Banquo, is most impressive.

An excellent example of the use of hallucination in poetic art is offered by Goethe's "Erl King."

2. Illusion.

Illusions are to be differentiated from hallucinations. They are sensory impressions, which, on the way to the organ of apperception, undergo falsification, and consciousness is deceived concerning the source of the sensory phenomena.

Their occurrence depends upon the existence of the peripheral sensory apparatus; their manner of origin is centripetal.

Owing to the complexity of the process of perception, we can understand the frequency with which they occur. In fact, they are everyday phenomena of physiologic life.

Their places of origin may be:—

1. External space through which the physical stimulus has to pass (physical illusion).
2. The peripheral sensory apparatus, together with the subcortical organ of perception (physiologic illusion).
3. Cortical organ of apperception (psychic illusion).

1. Illusions that have their cause in external space are frequently caused by changes in the media through which the external stimulus has to pass in order to reach the sense-organ.

Thus, objects in thin air seem small and farther away, while the same objects in a denser atmosphere seem larger and nearer; since the refraction of the rays of light which takes place when they pass from a thinner medium to a denser is increased, and *vice versa*.

Owing to the physical and physiologic peculiarities of the eye, in riding in a railroad train the trees and telegraph poles seem to fly by us, while, in fact, we hasten by them; a stick thrust into the water seems to be bent; bright objects seen upon a dark ground seem to be larger than they are.

2. Inadequate stimulation of the sensory nerves is an important source of illusions. Owing to its specific energy, the sense-apparatus reacts to any kind of stimulus that comes in contact with it, with the production of a corresponding sensory impression.

The stimulation caused by congestion and exudation, as they occur in the choroid and retina, affect the optic nerve by pressure and are answered by perceptions of light. In catarrh of the middle ear or of the tubes, noises, rattling, and ringing in the ear occur.

The sense-apparatus cannot react to inadequate stimuli in any other way than with elementary qualities of sensation; but the subjective sensation may, when carried to the cortex, awaken an idea inadequate for the sensation, and thus induce an illusion.

One who is mentally sound and in full possession of his faculties may experience such an illusion; but he interprets the subjective sensation correctly, looks upon it for what it is, and concludes that the sense-apparatus is disturbed. In the case of the insane person whose consciousness is clouded, it is otherwise; it is only too easy for the subjective excitement to become transformed fantastically, owing to want of clearness and the existence of abnormal emotions.

Apparently many of the phenomena in the insane that are looked upon as hallucinations are to be explained by the fact that at first the patient, who is still somewhat clear in mind, recognizes the subjective sensations, and perceives them as flashes of light and roaring in the ear; but with progressive clouding of consciousness he turns the flames to devils, and changes the sounds into threats and insults, and thus obtains the elements for visions and voices.

This is especially true in those frequent cases in which the hallucinations have developed out of phosphenes or noises, and are still accompanied by subjective states of excitement of the sense-apparatus, when the phantasma or acusma is localized in one eye or one ear and disappears when the eye is closed, or changes its location in the visual field. The frequency and importance of these "illusions" make it necessary that, whenever such uncertain, stable subjective elementary sensations are associated with errors of the senses, the corresponding

sense-organ should be carefully examined physically; and, in the case of the ear, the use of a constant current, according to Brenner's procedure, is especially useful.[1]

3. Frequently enough the perceptive sense-apparatus, including the organ of perception, leaves nothing to be desired in normal activity. Falsification of the sensory impressions takes place only in the center of apperception; the illusion is psychically conditioned. The cause of this psychic origin of illusions lies *partly in the lack of attention* and partly *in defective perception,* and sometimes in *both simultaneously.* A phenomenon belonging here that is very frequent, and which occurs also under physiologic conditions, is emotional illusion. The exactness of perception in these cases is disturbed by the fact that thought is pre-occupied with a certain series of ideas. The sensory impression reaching the organ of apperception induces an idea with an accompanying sense-picture which is in accord with the state of feeling, but which does not correspond with reality, and it is projected externally like a true perception, without the patient becoming aware of his error.

Thus is explained the phenomenon of the frightened wanderer in a lonesome forest, who takes the rustling of the leaves for the steps of pursuers and robbers; how one troubled with the fear of ghosts, on entering a cemetery at night, sees behind every tombstone the ghost of a departed saint.

Thus it happens that one suffering with religious exaltation sees in church pictures of the Virgin nod to him, or the eyes of the image of the Lord on the cross turn, etc. Again, in the state of anger, the gestures and words of one who has occasioned it are looked upon as insults and threats; the person suffering with jealousy looks upon the most harmless signs in the object of his jealousy as suspicious and interprets them falsely; the person violently inflamed with love perceives the object of his affection in an ideal way, and sees ugliness in the light of beauty (Don Quixote and his adventure with Maritorne); finally, one in a state of exaltation might take windmills for giants, and attack them.

A second source of illusions lies in the want of clearness of impressions, whether this be due to want of attention, distraction, or to flightiness or incompleteness of the sensory impression.

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[1] Brenner's discovery of normal galvanic vertigo has been followed by most thorough study of vertigo, normal and abnormal, induced by galvanism, by J. Babinski; *vide* "Report of Observations made in the Clinic of Dr. J. Babinski, Paris, by C. G. Chaddock, M.D.," *American Journal of Insanity,* October, 1903. Here will be found a description of the procedure and suggestions concerning its importance as a means of diagnosis in cases of auditory hallucination, with the remarkable results of lumbar puncture in cases of tinnitus aurium and deafness due to disease of the internal ear.—TRANSLATOR.

In this category there is a great number of phenomena. Looking at the clouds in the sky, we see there the form of a giant, a house, or a ship. The false apperception awakens our attention, and we are no longer able to see the fantastic clouds in other than their real contours; or, as we go along the street abstractedly, we fancy we meet an acquaintance, and we are on the point of speaking to him, but, our attention awakened, we remark that it is a stranger.

This kind of illusion is favored very much by physical conditions that interfere with the clearness of impressions, like dusk, moonlight, fog, etc. Under such circumstances a tree may be mistaken for a man; a cloth hanging out of a window for the body of a man hanging.

Such illusions are immediately corrected by attention. If this is wanting, as when the illusional impression calls up the emotion of fear or fright, then the illusion remains uncorrected.

To this class belong those illusions that are frequently to be observed in the maniacal, in whom the enormous increase in the rapidity of thought makes impossible the quiet consideration and judgment of impressions coming from the external world.

A further source of illusions, which should be correctly called deliria of judgment, lies in the fact that the experience required for the differentiation of similar objects may be wanting (as in the child) or have been lost (as in states of mental weakness).

The baby looks upon every male person that comes before it as its papa, because differentiating ideas are yet wanting. The weak-minded or paralytic individual gathers up small shining objects because he looks upon them as gold and precious stones.

Finally, an illusion that occurs not infrequently in the insane is due to the fact that a new perception is not only similar to the original, but is regarded as identical by the individual. Such a phenomenon depends upon weakness of memory or lessened power of identical reproduction. The illusion becomes fixed, owing to the fact that the weakness of apperception and weakness of control which usually exist simultaneously prevent correction.

Upon this depends the mistaking of persons, not infrequent in the insane; which differs from the same error in the sane due to imperfect attention and abstraction, in that in the former it is constant, while in the sane it is transitory. In the insane this anomaly not infrequently persists with regard to certain persons for weeks, months, and sometimes throughout the whole course of the disease. Evidently in such cases there are certain, usually superficial, points of resemblance between the person present and the weakened memory-picture of the absent individual which cause the error.

The psychologic significance of illusion is the same as that of hallucination.

If correction of the error does not take place, then all possible results of a false perception may follow. The conditions and means of correction are the same as in the case of hallucination. With disturbance of mental clearness and of the activities of the senses, as they exist in the insane, falsification of consciousness by illusions is very common.

Deliria of the Senses in the Insane.

After these introductory remarks it remains to consider deliria of the senses (hallucinations and illusions) as they occur clinically, and as important pathologic elements of insanity. In this we must consider them with reference to two points:—

1. Their frequency and peculiarities as manifest in the various senses.

2. Their peculiarities and frequency in the various forms or states of insanity.

1. When we seek to ascertain the frequency of errors of the senses in insanity in general, we at once come upon great obstacles; for certainly they occur much more frequently than they are observed. Many insane persons know how to conceal them, just as they do their delusions. Besides this, there is the difficulty of differentiating the errors of the senses from simple fancies, deliria of judgment, and delusions.

The question concerning their frequency in the various senses is more important. While in the sane, aside from the everyday insignificant illusions that are immediately corrected, there may be hallucinations of sight (visions) and very rarely hallucinations of hearing, in the insane errors of the senses may occur in any sense—in fact, sometimes in all the senses at the same time.

In frequency hallucinations of sight and hearing are about equal; those of sight are observed mainly in acute insanity, those of hearing most frequently in chronic insanity. Hallucinations of smell and taste are much less frequent. In the domains of common cutaneous sensibility and general sensibility hallucinations and illusions cannot be very readily differentiated. In these two domains errors are decidedly more frequent than in those of smell and taste. The most infrequent phenomenon is that of simultaneous hallucinations (or illusions) of all the senses.

Since sense-deliria are expressed thoughts of conscious mental life, or are, at least, projection signals influenced by the state of feeling of unconscious psychic activity, in general they are in harmony with the immediate content of thought and feeling.

The melancholic person, in his state of anxious expectation, sees his pursuer, his executioner, who is about to give him into the hands of the law; the melancholic mother, troubled about the welfare of her children, hears their cries for help, the death-rattle in their throats; the maniac, moving in expansive affect, takes pleasure in looking at his air-castles and imaginary pleasures; the person suffering with delusions of persecution hears the whispering of his enemies as they plan to destroy him. In the expression of those about him the persecuted patient sees signs of mutual understanding; in food and drink he tastes poison; in unpleasant cutaneous and general sensations he recognizes the nightly activity of enemies who seek to destroy his life and health by means of strange machines. The religious maniac sees heaven open, is blessed by the apparition of heavenly beings, hears songs of angels and the voice of God giving commands and speaking wisdom, etc.

The various ways in which those having hallucinations of hearing render their voices objective is remarkable.

In some cases—namely, where the hallucination is the plastic expression of clearly conscious ideas, and congruent with the momentary content of thought—the patient speaks of his own brain as the place of its origin ("It is something that takes place in my head"). Many patients speak of the voices they hear as "loud thinking" or "thought-speech."

Usually, however, hallucinations of hearing are projected into the external world, and in the consciousness of the patient they have the value of a real auditory perception. Sometimes the voices seem to be in immediate proximity and are cried into the ear—conditions which make it probable that the place of origin of these pseudo-hallucinations is the organ of perception. At any rate, in such cases there is usually coexistent auditory hyperesthesia, with elementary subjective sensations due to exciting processes affecting the sense-apparatus.

Less frequently the patient locates the voices in organs of the body distant from the brain; for example, in the chest or abdomen, where apparently and usually there are demonstrable simultaneous abnormal sensations, which fix the attention on the part, and thus give rise to the particular localization.

Ordinarily, however, the voices are perceived as coming from the external world, like actual auditory perceptions.

With relation to *visual hallucination* it may be said that they are especially lively and frequent at night or in the dark; hence the rule that the room in which a patient affected with visual hallucination is placed should never be entirely dark. Often at the beginning of the disease these hallucinations are shadowy, like the forms in a shadow-play, and only reach plasticity at the height of the disease, to fade with the beginning of improvement. They may become so continuous

and numerous that the patient moves in a perfect dream-world. Then the mask-like, staring features and breathless fixation of a single point are characteristic. They occur with especial frequency in acute conditions of exhaustion (anemia of the central organ) and in forms of alcoholic insanity.

Isolated hallucinations of smell and taste do not readily occur. It is scarcely possible certainly to differentiate the former from olfactory sensations brought about by hyperesthesia of the olfactory nerve; and likewise, frequently as the basis of errors of taste, there may be an actual gustatory sensation, dependent, perhaps, upon gastric or buccal catarrh. Almost without exception the hallucinations of taste and smell are of unpleasant character. The patient smells cadaverous odors or sulphurous gases; the food tastes of copper, arsenic, human feces, etc.

Olfactory hallucinations are remarkably frequent in insanity on an onanistic foundation, as well as in connection with conditions dependent upon sexual diseases in women, especially at the climacteric.

In the domain of cutaneous sensations, illusions and hallucinations are difficult to differentiate. For the most part, phenomena occurring here are really illusional apperceptions of actual sensations; they are paresthesias or hyperesthesias of spinal origin, or due to rheumatic affections, eczemas, variations of the capillary circulation, etc., which become the basis of certain organic illusions of persecution, like the delusions of being magnetized by unseen persons, of being covered with poison, infected, etc. General anesthesias can sometimes be discovered when the patient thinks he is dead; or partial anesthesias, when he thinks his arms and legs are made of glass or that he has been robbed of his head or some other part of his body.

In patients afflicted with hemianesthesia there is sometimes the delusion that another person or a corpse lies with them in bed. Thus, a patient of Maudsley, who was a paralytic and suffered with hemianesthesia and convulsions of the same side, thought another person was lying beside him and constantly striking him.

The delusion of flying or of being carried away, of having changed in weight, may depend upon anomalies of the muscle-sense; or under such circumstances the size of the body or of a single member not infrequently seems changed.

Also in the domain of general sensibility illusions and hallucinations play an important rôle, especially in hypochondriacs. In these cases it is difficult to separate hallucinations and illusions. The first exist when the abnormal imagination becomes effective as a stimulus,

and the imaginary sensation is actually centrally excited. Illusions exist when abnormally intensified and perverted general sensations reach consciousness and are there erroneously interpreted.

This result can quite as well be due to a condition in which the organ of consciousness has become hyperesthetic, and perceives vegetative processes which normally do not reach consciousness, as to a condition in which an organic sensation has become pathologically intensified, and thus crosses the threshold of consciousness. As a rule, we have here to deal with illusions. Autopsies, as well as careful clinical examinations, often enough show the substratum of hypochondriac sensations to be changes in the position and tissues of the vegetative organs. Such alterations are catarrh of the digestive organs, twists and abnormal position of the intestines, obstipation, hemorrhoids, and chronic inflammation of the diaphragm (one of Esquirol's patients thought he had a whole council in his abdomen, and at the autopsy it was shown that he had chronic peritonitis). Colicky pains are also effectual (a certain Peter Jurieu thought that colicky pains, which he frequently had, were due to fights which seven knights had in his stomach). No less do infarcts, catarrh, new growths and abnormal positions of the uterus, and spermatorrhea induce similar mental anomalies.

Thus, in the Middle Ages, abnormal sexual sensations led to the delusions of incubus and succubus. Onanists sometimes have the illusion that semen is taken away from them by unseen persons, as a result of abnormal sensations in the urethra.

The frequency of such illusional interpretation makes it necessary in such cases to make a very careful examination of the organs involved.

2. With reference to the occurrence of sense-deliria in the various forms of insanity, distinction is to be made between acute and chronic forms. In acute insanity they are more frequent than in its chronic forms, and in the former visual hallucinations predominate over auditory.

In melancholic states auditory and sensory deliria are more frequent than those of sight. They are most frequent in melancholia activa and melancholia attonita.

In the acute manias, as well as in acute hallucinatory insanity, hallucinations are prominent symptoms. In chronic manias, with exception of the puerperal form, they are infrequent.

The infrequency of sense-deliria in the periodic forms of mania, as well as in circular insanity, is remarkable.

In states of paranoia sense-deliria are very frequent, especially those of hearing; and then those of sensibility and of smell and taste, in this order of relative frequency. Visual hallucinations occur episodically, and most frequently when the disease is developed on an alcoholic basis.

In case of religious-expansive paranoia hallucinations of hearing and sight are very common; sometimes they become so intensified temporarily as to induce a state of ecstasy.

In states of dementia hallucinations are absent. Here illusions may occur upon the basis of imperfect percepts and lost criticism.

Also in dementia paralytica sense-deliria are infrequent. They are more frequently observed in intercurrent states of excitement, and especially in those that are depressive in character.

CHAPTER VIII.

Disturbances of Sensory Functions.

THESE disturbances are important elements of insanity, in that they form the substratum for delusions, sense-deliria, and emotional states, and may bring about paroxysms of insanity.

The examination of sensibility in insanity is usually difficult, partly because of defective attention and changing states of consciousness in the patient, as a result of which the threshold of excitability is continually changed; partly on account of the changed states of circulation in the vessels of the skin, for anemia of the skin diminishes, and hyperemia increases, tactile sensibility.

Functionally, we may differentiate as follows:—

1. States of lessened or lost excitability and excitation (anesthesias).

2. States of increased excitability and excitation (hyperesthesias and neuralgias).

1. ANESTHESIAS.

Anesthesia may be psychically a result of loss of apperception in the psychic organ; organically, a result of destruction of conducting paths and peripheral sense-organs.

As a rule, we have to deal with disturbed apperception associated with integrity of nervous conducting paths.

(a) ANESTHESIAS OF THE SENSE-ORGANS.—The psychic anesthesia which results from absence of the emotional coloring which normally accompanies a sense-perception has already been alluded to in connection with anomalies of the emotions. The accompanying pleasant or unpleasant feelings in the hysteric may be perverse (idiosyncrasies). It remains to mention here the loss of sensation in itself. As a rule, this is a disturbance of apperception due to the loss of the psychic element in the sensory processes (defect of consciousness, want

of attention), and thus it is observed in stupor, mania, idiocy, pathologic dream-states, etc. Less frequently it is of an organic nature and due to destruction of the cortical center, the conducting paths, or degeneration of the sense-organ (amblyopia and amaurosis as expression of diseases of the retina, genetic relation of which with insanity is to be sought in common vasomotor sympathetic diseases; anosmia due to degeneration of the olfactory bulbs, often found in paralytics).

(b) ANESTHESIA OF CUTANEOUS AND MUSCULAR SENSIBILITY.—The first may affect the pain, tactile, and temperature senses. Usually it is psychically conditioned, and frequently one of the symptoms of the hysteric neurosis; less frequently it is due to degenerative diseases of the spinal cord (dementia paralytica) and focal brain diseases.

The loss of the pain-sense is of great significance in insanity. As a rule, the analgesia is psychically induced, as a result of the inexcitability of the psychic organ. Physiologic life presents analogies, as in the case of the soldier, who, in the thick of the fight, is wounded and does not know it; or of the martyr, who, because of his religious ecstasy, does not feel wounds and torture.

The clinical significance of analgesias in insanity is great, since they may lead to intentional self-injury, brutality in the manner of carrying out suicide, and finally to accidents (burning).

Thus there are patients who crucify or castrate themselves, or cause themselves to be torn to pieces by horses. Lack of sensibility to cold is usually psychic, and occurs especially in the maniacal and demented. It is owing to this anomaly that such patients run about without clothes. In anemic states, on the other hand, there is usually an increased desire for heat.

The feeling of many patients of having changed in weight, of being abnormally light, of being of abnormal size either in body or in certain members, usually depends upon diminished muscular sense. If the cutaneous and muscular senses be simultaneously lost, then the patients have the feeling that they have absolutely lost the portion of the body concerned; if the anesthesia be general, consciousness of personality may be wanting and the patient think himself dead.

(c) ANESTHESIAS OF GENERAL SENSIBILITY.—Anomalies of this kind have been but little investigated, but they are to be referred, for the most part, to psychic elementary disturbances of consciousness. Here belong the defective feeling of hunger, thirst, physical fatigue (mania), and defective feeling of illness in severe intercurrent diseases (walking typhoid, pneumonia). Certain nihilistic hypochondriac delusions concerning the disappearance or lack of organs, as they occur in dementia paralytica and senilis, are also due to anesthesias.

Complaints of the insane, and especially of melancholics, of feeling empty, of being hollow, or of pressure in the head, of drying up of the brain, or of having air or water on the brain, and the like, require more exact investigation.

Many of these sensations, that are partly direct and partly allegoric interpretations of sensations, are to be referred to anomalies of the scalp (feeling of inhibition of thought in paralysis of the occipital nerves), or perhaps to anomalies of the recurrent trigeminal nerves; others are due to disturbances of general sensibility which have their foundation in anatomic processes forming the basis of the psychosis.

2. Hyperesthesias.

These disturbances are much more frequent and important in the insane than the anesthesias. They may be due to changes in the excitability of the peripheral organs, the conducting paths, or the central psychic apparatus. Their common characteristic is the abnormally deep threshold of stimulation for adequate stimuli. In these conditions the psychic element of mental tension plays an important rôle, like that seen in case of emotional expectation.

(a) Hyperesthesias of the Higher Sense-organs.—Here emotional coloring and intensity of sensibility must be differentiated. The former expresses itself in potentiated feelings of pleasure and displeasure, and is found in states of psychic exaltation (mania, states of hysteric excitement).

The abnormally intense excitation, as a rule, occurs with the first phenomenon; often also with manifestations of irritation induced by inadequate stimuli, which affect the peripheral sense-oragn or its conducting path (hyperesthesia of the optic nerve, with photopsia and chromatopsia; hyperacusis with subjective noises).

For the most part, hyperesthesia is due to increased excitability of the peripheral sense-organ or its conducting path; less frequently to such a state of the organ of apperception. It occurs as one of the symptoms of general intensification of excitability in mania, acute delirium, hypochondria, and hysteria.

(b) Hyperesthesias in the Domain of Cutaneous Sensibility.—They occur in various insane states. Their foundation is less frequently psychic than organic (increased excitability of the peripheral end-organ and the conducting paths).

Circumscribed hyperesthesias are found to occur not infrequently in melancholics, and cause such patients to rub the skin until it is injured.

Hyperesthetic conditions of spinal origin are frequently reflected symptoms of irritation in the sexual organs in women, and in men are due to onanistic excesses.

With paralgic sensations, they form the foundation for delusions of being persecuted with electricity and magnetism by unseen persons; of being pricked with needles; of being surrounded with poisonous gases and the like.

Probably the troublesome feeling of pulsation of the vessels which occurs in hypochondria, melancholia, and hysteria is to be referred to hyperesthesia of the *nervi vasorum;* certain conditions of nervous cardiac palpitation to hyperesthesia of the sensory nerves of the cardiac region. Hyperesthesia of the muscle-nerves may be the cause of the painful muscular unrest *(anxietas tibiarum)* that not infrequently is troublesome in the hysteric, hypochondriac, and melancholic.

(c) HYPERESTHESIA IN THE DOMAIN OF GENERAL SENSIBILITY.—This is essentially an elementary disturbance in hypochondria.

Hypochondria may be due to central causes, in that the excitation of vegetative nerves, which ordinarily are reflected into consciousness in the form of feelings, enter consciousness with clearness; or it may arise peripherally, when local affections of the vegetative organs produce abnormal excitation of their nerves, which is then communicated to consciousness.

The first, or psychic, manner of origin of hypochondriac states is facilitated by psychic tension and direction of the patient's attention to physical conditions. The second may be due to gastro-intestinal catarrh; to sexual diseases, especially onanism, gonorrhea, etc.; and to conditions that induce a localized feeling of disease rather than actual pain.

In cases having this origin the hyperesthesia is originally peripheral, but it does not last long before irradiation of the irritation takes place, and thus it becomes psychic (secondary hyperesthesia), with the formation of a vicious circle.

Merely an idea suffices to induce, in this degree of psychic hyperesthesia, the corresponding sensation, with concomitant excitement of the corresponding nervous paths (cases of psychic hydrophobia—the patient, having been bitten or touched by a dog supposed to be mad, imagines that he has been infected, and soon develops the symptoms of hydrophobia, a true hypochondriac hydrophobia); just as peripheral excitation of the nerves of general sensibility due to local diseases of the organs induces adequate ideas in consciousness. Therefore Romberg justly says: "The sensations of these patients are, indeed,

imagined, but they are projected from the mind to the body." As far as consciousness is concerned, it is a matter of indifference whether the sensation is objective or subjective; whether the excitation is peripheral or arises at the central end of the apparatus.

(d) States of Abnormal Excitation in the Paths of the Sensory Nerves (Neuralgias).—Frequently neuralgias accompany insanity. They may be widespread or limited. Especially frequent and important are intercostal, lumbar, occipital, and trigeminal neuralgias. They are due to the disturbances of nutrition in the nervous system common to neuralgias and insanity (anemia, etc.); and they are of symptomatic significance in the disease-picture, or they stand in narrower functional relation with the psychosis, and are co-ordinate symptoms, probably to be regarded as projected symptoms.

The functional value of neuralgia is explained in four ways:—

1. It is almost without significance as far as the psychic life is concerned, and at the most has an influence only upon mood and well-being, just as in the sane. Neuralgia occurs along with the psychosis, but without any relation to it.

2. It forms the organic substratum of some delusion that has arisen in the way of allegorization, as in the case of other anomalies of sensibility.

3. It occurs in connection with elementary psychic disturbances, and induces them by irradiation of the neuralgic irritation to corresponding centers. If these centers be sensorial, ideational, or affective, like the accompanying sensations in simple neuralgia, hallucinations and ideas having the character of imperative concepts may be induced, and affective states may likewise result.

Myodynias may, under some circumstances, play the rôle of neuralgias.

Not infrequently here a peculiar vicious circle is formed, in that not only the neuralgia, which is constantly recurring, induces again and again the psychic elementary disturbance, but the latter may again excite the neuralgia in the paths which were primarily responsible for the association. Schüle, in a work which has unfortunately received too little recognition, has laid emphasis upon this important psychic fact ("Die Dysphrenia Neuralgica," 1867). This relationship is seen with especial clearness in a group of patients whom Falret describes as affected with "moral hypochondria with consciousness of the condition." Here, with exacerbation of the nervous symptom-complex, the irritable, painful emotional state is regularly intensified. The time of the menses (temporarily increased excitability of the psychic organ) induces this, and thus leads to exacerbation of the psychosis.

4. The recrudescence of neuralgia leads to formal psychic attacks: reflex psychosis, dysthymia, or dysphrenia neuralgica, in its narrower

sense (Schüle, Griesinger). Such unusual excitability of the central organ points to grave anomalies of it. In fact, this dysphrenia neuralgica is observed in individuals who suffer with a neurosis, either hereditary ("burdened"), hysteric, hypochondriac, or epileptic. In such cases the neuralgia may be looked upon sometimes as an aura, sometimes as an equivalent for an outbreak of the neurosis; at least, in cases of epilepsy these neuralgic attacks leave no doubt concerning the correctness of this view. The whole process may be regarded as analogous with the epileptic delirium that follows a true epileptic convulsion.

The single attack of neuralgic dysphrenia may occur clinically as an hallucinatory delirium, a pathologic affect, angry mania, or raptus melancholicus. Here, too, the neuralgic element may undergo allegoric elaboration in becoming the nucleus of delusions, which then in every following attack return in their typic form. In such a case a vicious circle also may arise, in which the psychic attack, however provoked, immediately causes implication of the neuralgic nerve-area.

CHAPTER IX.

Disturbances of Motor Functions.

In the first place, and as following disturbances of the psychomotor sphere, we must recall the fact that the whole voluntary muscular system is kept constantly in excitement by psychic processes, and that upon this excitation not only physiognomonic expression, but also attitude, intonation, timbre of the voice, etc., depend. This psychomotor innervation is changed by abnormal psychic processes, and the alteration is reflected in the outward manifestations of the patient. It is recognized, again, as changed muscle-tone in the diseased consciousness. It may be stated that every psychopathic state, like the physiologic states of emotion, has its own peculiar facial expression and general manner of movement, which for the experienced, on superficial observation, make a probable diagnosis possible.

The detailed description of these physiognomonic types as they are found in changes of the glance, expression, and general attitude of the body, cannot be described; and even photographs are but poor substitutes for direct observation.

Their analysis cannot be attempted here, but examples may be mentioned: the troubled, wrinkled mien of the depressed hypochondriac; the changing physiognomy of the maniac, subject to all sorts of emotional impressions; the confused expression of the paranoiac; the swimming eyes of

the hysteric and erotic; the bent head and shuffling gait of the melancholic; the proud step of the person suffering with grand ideas; the shuffling, careless gait and foolish laugh of the demented. In states of mental weakness (dementia paralytica, multiple sclerosis) I have sometimes observed paramimia, where patients who felt joyful have expressed it by a weeping mien, and *vice versa*.

Another important group of motor disturbances are those due to functional anomalies of the motor centers and the conducting paths, and also to manifestations of abnormal reflex excitability.

Consideration of them is of no small value in diagnosis and prognosis.

They may be:—

1. Pre-existent—the result of previous nervous diseases (tremor, facial spasm) or of congenital anomalies (inequality of facial innervation, etc., as functional signs of degeneracy).

2. They may arise simultaneously with the psychic disease:—

(a) As complicating, and due to general disease (anemia), to a neurosis (chorea, hysteria, epilepsy), or to focal diseases standing in relation to the psychosis (cerebral tumor, apoplexy).

(b) Co-ordinate with psychic symptoms and due to the same anatomic process that induces the latter (dementia paralytica, acute delirium).

In such cases they may be due to changes in the reflex, automatic, and psychomotor centers; to disturbances of conduction in the motor paths; to sensory functional disturbances and abnormal reflexes thus induced. All possible functional disturbances may occur here.

1. Paralyses as a result of focal or diffuse diseases of the brain and spinal cord (dementia paralytica and dementia senilis, chronic alcoholism, acute delirium); the paralyses that occur in the domain of the hypoglossus, facial, and motor oculi nerves are especially important; also disturbances of deglutition as bulbar symptoms in the final stages of dementia paralytica and acute delirium.

2. Spasms due to capillary anemia of motor centers (vascular spasm, edema), or to intensified reflex excitability. In this category belong many disturbances of deglutition in acute delirium and hysteria. A form of cramp that is not infrequent in insanity is that called grinding of the teeth (motor portion of trigeminus), which is often observed in dementia paralytica, hydrocephalic idiocy, and acute delirium.

3. Contractures in idiots, as a result of brain defect or brain disease; in focal diseases (apoplexy and sclerosis); sometimes also following a too prolonged use of the jacket or maintenance of a fixed attitude.

4. Tremor due to anemia, alcoholic intoxication, organic brain affections (dementia paralytica, sclerosis), and sometimes also as a result of excitement (fear).

5. Disturbances of co-ordination due to organic changes in the co-ordinating mechanism; loss of ideas of movements and of muscular feeling (dementia paralytica, acute delirium).[1]

CHAPTER X.

Disturbances of the Vasomotor Nerves.

THE importance of anomalies of this character will be understood when we consider the fact that, whenever states of psychic emotion occur, the vasomotor nervous system is involved.

The circumstance that such affects, especially fright, may immediately induce a psychosis, of course, upon the foundation of special predisposition, lends to the vasomotor anomalies of innervation, which form the connecting link between cause and effect, a high pathogenic significance.

Moreover, clinical observation justifies the assumption that numerous psychoses are founded upon angioneuroses of the brain. In certain melancholic states, associated with a small, contracted pulse; with a cool, dry, rough, scaly, wrinkled skin, devoid of turgor; with livid, and even cyanotic, extremities—evidently we have to deal with a neuropathic state of innervation of the arteries, and consequent disturbances of nutrition of the brain; in many cases, especially in melancholia with stupor, the vascular spasm induces secondary venous stasis, that may reach the degree of edema.

On the other hand, in many maniacal persons—that is, in the grave form of alcoholic mania, and in states of maniacal excitement in paralytics—we meet with symptoms which point to a condition of vascular paralysis, and consequent fluctionary cerebral hyperemia.

Without doubt, anomalies of vasomotor innervation are of the greatest importance in the pathogenesis and clinical course of dementia paralytica. In these cases there is demonstrable (sphygmograph) progressive paralysis of the vessels, which even in the earlier stages may show itself in the form of a slow monocrotic pulse or in an extreme degree of vascular paralysis. Such vascular paralyses, often unilateral, are quite analogous with the phenomena induced by section of the

[1] The numerous investigations of electric excitability in the insane have thus far given no results and have no diagnostic value.

cervical sympathetic after the method of Claude Bernard, and they occur in the various stages of paralysis. They are, without doubt, important causal elements in the variations of blood-pressure upon which the apoplectiform attacks depend, as well as in the attacks of maniacal excitement which frequently run their course in the form of a vascular storm.

Too, in these cases amyl nitrite induces exquisite vascular paralysis, while in case of melancholia with neuropathic vascular symptoms it has scarcely any effect at all.

Another important elementary disturbance in insanity should probably be regarded as a vasomotor disturbance, since such disturbances seem to induce the symptom-complex in question, and, at any rate, form an integral element of it. This is the so-called precordial anxiety: *i.e.*, a state of anxious emotional expectation associated with painful feelings of pressure and distress in the cardiac region.

The first point to determine is the interrelation of the two phenomena. It is possible that these paralgic sensations in the epigastrium are the expression of a primary excitation of sensory nerves, this state of excitement being conducted to consciousness and there inducing a feeling of anxiety; or it may be that for the psychic process they are simultaneous and co-ordinated states of excitation in central sensory nerves, this excitement, according to the law of eccentric projection, being carried to the peripheral ends of the conducting path.

With considerable certainty we may assume that the affected nervous paths are those belonging to the heart. The circumstance that the precordial sensation is vague and not definitely located would indicate a neurosis of the visceral nervous paths. Besides, pointing to the same conclusion, there are the constant localization of the sensations accompanying the feeling of anxiety in the region of the heart; the fact that precordial anxiety is always associated with disturbed cardiac innervation (palpitation, irregularity of the heart's action, anomalies of the pulse, shooting pains in the heart); the precordial anxiety in poisoning by certain poisons that especially affect the heart (nicotine); and finally its occurrence as the principal symptom in an undoubted neurosis of the heart (angina pectoris).

Precordial anxiety, as experience teaches, may be induced by psychic stimuli, such as frightful ideas, apperceptions, and emotions, and thus it may be of central origin; or it may be caused by neuralgias, and thus be of peripheral origin.

Consideration of the first manner of origin explains the facts that the nervous system of the heart is in significant dependence upon certain psychic processes (palpitation in emotional states), and that under physiologic conditions affects, in harmony with their quality, may be accompanied by feelings of precordial oppression or its opposite.

The peripheral manner of origin is to be explained only by irradiation of a sensory stimulus to the nervous system of the heart.

Precordial anxiety, in fact, is only observed in states of excitation of the visceral sensory nerves; never as a result of neuralgic affections of the spinal nerves.[1] This exclusive relation, as well as the regular simultaneous affection of the cardiac nerves in the form of precordial distress, Romberg, as is well known, established as a differential point between neuralgia of the spinal nerves and of those of the sympathetic system.

Thus, precordial anxiety seems to arise when, as a result of psychic irritation or of transference of a state of irritation in the visceral nervous paths, the vasomotor nerves of the cardiac muscle are thrown into a state of intense excitement, and vascular spasm is thus induced.

The consequent disturbed function of the automatic ganglia of the cardiac muscle is conducted by sensory nerve-fibers of the heart to the organ of consciousness and there induces the feeling of anxiety, which is then projected to its place of origin. Too, the dreadful pain with which precordial anxiety is frequently initiated may be due to excitation of sensory fibres in the vagus and sympathetic of the cardiac region, while the simultaneous palpitation is explained by interference with the supply of arterial blood to the heart-muscle, and consequent disturbances of innervation.

The feeling of globus, or of closing up of the throat, that accompanies precordial anxiety; a peculiar uncertainty of the voice, which sometimes is entirely lost; and the superficial, frequent respiration are to be regarded as reflected symptoms in the path of the vagus (glossopharyngeal, superior laryngeal). The suppression and subsequent increase of perspiration and urine are to be explained by the spasmodic disturbance of the circulation.

The remarkable fact that in sane persons precordial anxiety is only exceptionally accompanied with painful ideas is easily explained when we remember that, as in the majority of neuroses, a predisposing factor, an increase of excitability, is necessary for the origin of the abnormal disturbance.

Such a result, however, always follows where a psychic stimulus induces precordial anxiety of any duration and intensity (hysteria, epilepsy, melancholia, hypochondria, chronic alcoholism, hydrophobia).

The precordial anxiety appears then as a pathologic intensification of a phenomenon that occurs under physiologic conditions, when psychic emotions reach the intensity of affects, in nervous paths standing in close relation with psychic life.

The psychic significance of precordial anxiety is very great. As a result of the intense organic coloring of the affect which induces it, it leads to unbearable intensification of the emotional condition. In the sphere of ideation it has a paralyzing, inhibiting effect, bringing about confusion or even loss of the power of apperception; or it induces frightful deliria and hallucinations.

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[1] Intense intercostal neuralgias, owing to the fact that they hinder movement of the thorax, like valvular disease and emphysema, cause mechanical obstacles to expansion of the lungs, and, of course, interference with breathing; but they do not induce precordial anxiety. But, with intercostal neuralgia, precordial anxiety may be localized and felt at the seat of the neuralgia, and become the object of attention.

On the motor side it imperatively drives to some act that will overcome the resulting state of psychic tension; and—depending upon its intensity, the suddenness of its occurrence, and the depth of the disturbance of consciousness—it is expressed in violent, purposeless running about, or impulsive acts that are hardly conscious, and which find a motive only in a dim consciousness of the need of a change of the psychic situation at any cost; or they may lead finally to blind ravings, true psychic convulsions, comparable to those unconscious, violent motor explosions that characterize an epileptic attack.

Frightful self-mutilations, suicide, murder, wild destruction of everything that the patient can lay hands on, are frequent events, and are to be understood as due to the horrible fear, the profound disturbance of consciousness, and the analgesia.

During an attack the influence of such acts to bring relief is remarkable.

Precordial anxiety occurs as an intercurrent symptom in the course of the neuroses and psychoses previously mentioned, or as an independent attack lasting minutes or hours (raptus melancholicus).

CHAPTER XI.

Disturbances of the Trophic Functions.

THE domain of the trophic functions has been but partially investigated by physiology. The relationship between trophic disturbances and diseases of the central organs of the nervous system is not immediately demonstrable.

However, it is possible to cite in favor of such a relationship a number of congenital defects of formation and development of the body in individuals of abnormal, usually hereditarily conditioned, brain organization and development, which are also revealed by a number of functional anomalies.

Among such anatomic signs of degeneracy may be mentioned the following: Certain anomalies of cranial development; disproportion of the bones of the face and the bones of the cranium; lack of symmetry in the development of the two halves of the face; defective position and abnormal size (too large or too small) of the ears; immediate transition of the lobes of the ears into the skin of the cheek; rudimentary formation of the ears; incomplete differentiation of the teeth and absence of the second dentition; too large or too small a mouth; harelip and wolf's throat; hypertrophy of the under lip; prominence of the *os incisivum;* a palate too deep, too narrow, too flat, or too wide, or one-sided flattening of it; defective union of the palatal suture; obliquity of the nose or of the palpebral fissures; retinitis pigmentosa, con-

genital blindness, coloboma iridis, and albinism; distorted growth; hypertrophy of the subcutaneous fatty tissue; club-foot and club-hand; lack of symmetry of the hands; epispadias and hypospadias; absence of one or both testicles; infantile testicles; hermaphroditism; uterus bicornis, absence of the uterus, vagina, or mammæ; abnormal growth of hair on the body; beards in women; distorted growth of the eyebrows, etc. The relationship between disturbances of development of the brain and these anatomic signs of degeneracy is most clearly shown in cretinism.

With special reference to anomalies of the skull, it must still be remembered that the brain and skull are independent in growth, but still stand in reciprocal relation. Thus a microcephalic skull may be due to premature synostosis of the cranial sutures, but it may also result from arrest of development of the brain itself. Premature synostoses of the cranial sutures, for the most part, lead to partial limitations of the intracranial space. The most striking variety of this anomaly is the premature tribasal synostosis that lies at the foundation of cretinism. The anomalies acquired as a result of rickets are to be differentiated from these, which are anomalies of development that depend upon defects in the embryo itself and are usually hereditary.

That acquired affections of the brain may likewise induce secondary trophic disturbances has been proved by Charcot. In support of this we have the acute pernicious decubitus following certain focal diseases of the brain (apoplexy) located on the back on the hemiplegic side, independent of any anesthesia, vasomotor paralysis, and with perfect cleanliness; also the inflammation of the synovial membranes of the joints on the paralyzed side, in cerebral cases, brain softening, and apoplectic foci.

In mental diseases the cerebral trophic influence is shown by remarkable variations of body-weight, independent of food and manner of living: *e.g.*, the astounding increase of fat when a patient passes from a primary to the secondary stage of insanity; also, in certain cases, the severe progressive fatty degeneration of the blood-forming organs that occurs without cause, and leads rapidly to death as a result of anomaly of blood-formation—the so-called pernicious anemia. The abnormal brittleness of the bones of certain patients not infrequently accompanied by increased excretion of phosphoric acid and calcium carbonate is also to be mentioned. In such cases the bones, especially the ribs, show a disappearance of the inorganic salts and become soft. Rindfleisch calls attention to the possibility that hyperemic stasis in the vessels of the bone-marrow may be the cause of the absorption of the organic salts, and that this hyperemia may be dependent upon anomalies of the vasomotor nerves.

In melancholics and the demented certain disturbances of nutrition of the skin are noteworthy (zoster, roughness of the epidermis and nails), which also occur in the hysteropathic. They call to mind analogous processes in lepra mutilans, the cause of which Virchow found to be a perineuritis.

Of late, interesting cases of abnormal pigmentation in the insane have been published ("nigrities").

Finally, the remarkable rapidity with which healing of injuries takes place in the first stages of dementia paralytica is to be mentioned, probably due to paralysis of vessels and the readiness with which new vessels are formed, while in the later stages of this disease (degeneration of the posterior horns of the spinal cord) wounds do not heal, and decubitus readily occurs.

CHAPTER XII.

Disturbances of the Secretory Functions.

ANOMALIES of this kind are frequent in the insane, but they have been but little investigated. In the majority of such cases their origin in disturbances of the circulation following alterations of vasomotor innervation is suggested; in some cases, in abnormal changes affecting certain centers of the nervous system that regulate secretory processes.

Disturbances of secretion are regularly found in acute states of insanity, but they may be wanting in chronic insane conditions. In melancholic insanity the secretions are usually lessened, while in maniacal states they are usually increased.

SECRETION OF TEARS.—A fact that was noticed by the older observers is that frequently the secretion of tears is wanting in melancholics. "My eyes are as dry as my heart." Usually only with the beginning of convalescence is weeping accompanied by tears.

URINARY SECRETION.—Qualitative and quantitative changes in the secretion of urine are, as is well known, not infrequent in brain diseases. They may be (Mendel) the expression of anomalies of tissue-metabolism in the brain; of tissue-metabolism, induced by the brain disease, in other organs; or they may result from the influence of the diseased brain upon the vasomotor nerves of the kidneys (injuries of the crura and consequent apoplexies in the kidneys and albuminuria).

Examination of the urine of the insane is of great importance as throwing light upon tissue-changes, but quantitative examination is not easy to carry out on account of the difficulty of collecting the entire secretion.

Rabow finds, partly in accord with Lombroso, that diuresis is lessened in melancholia. In spite of abundant exhibition of fluid it may sink to 100 cubic centimeters. We have no reliable statements concerning the amount of urine secreted in conditions of mental excitement.

According to Lombroso, the specific gravity is lessened in melancholia (according to Rabow, the opposite), normal in mania, and increased in dementia.

As bearing upon the qualitative relations of the urine, the following is noteworthy: Rabow found decided lessening of the chlorides and urea in the melancholic. Paralytics, in the beginning of the disease, usually secrete a great amount of urine, and, corresponding with the increased consumption of nourishment, more urea and chlorides than healthy individuals. With increasing dementia the amount of urine decreases, with absolute diminution of the amount of urea and chlorides, while the specific gravity is increased, and cloudiness is seldom wanting as a result of uric acid salts.

In the extremest degrees of secondary dementia Rabow found that urea and chlorides did not correspond with the great amount of food consumed, and that therefore a certain retardation of tissue-metabolism took place.

Mendel has made important investigations with reference to phosphoric acid. He found, as a rule, in cases of chronic brain disease, the amount of phosphoric acid absolutely and relatively, as compared with the other solid constituents, less than in the healthy, who consumed quantitatively and qualitatively the same food.

In those periods of paralysis in which, in spite of a good appetite and the absence of fever, rapid loss of body-weight is noticeable, the urine was unusually heavy (1.030), and phosphoric and sulphuric acids were markedly increased relatively to the other solid constituents.

In states of maniacal excitement there was a marked decrease of phosphoric acid to 1 per cent. and less, absolutely and relatively as compared with the other solid constituents of the urine. After apoplectiform, epileptic, and epileptiform attacks, phosphoric acid increases absolutely and relatively.

A statement of Huppert, to the effect that after epileptic attacks albumin appears in the urine, has been confirmed by Rabow and others.

Too, in paralytics, albumin was demonstrated by Rabenau in numerous cases; and the fact, demonstrated by Huppert, that albumin, in connection with hyaline casts and red blood-corpuscles, appeared after cerebral attacks (apoplectiform and epileptiform) was confirmed.

Huppert has observed the same thing in very acute mania, in epileptic attacks due to lues, in senile dementia with paralytic attacks, and also in the early stages of simple apoplexy.

Westphal has observed albuminuria in delirium tremens, and Fürstner has seen it as a transitory symptom, usually in association with fibrin casts and a few blood-corpuscles, in chronic alcoholism, without finding nephritis at the autopsy.

Fürstner's view, that this transitory albuminuria is brought about by an affection of the albumin center (Claude Bernard) due to disturbance of the circulation, requires further confirmation.

Anomalies of the Secretion of Saliva.—In melancholic conditions the secretion of saliva is, for the most part, diminished; in the maniacal it is frequently increased. The increase in the secretion of saliva (ptyalism) is not to be confounded with simple flowing of the saliva from the mouth when there is paralysis of deglutition, or when the mouth is held open, and the quantity of the secretion is not abnormal, as often occurs in the demented and in states of stupor.

The secretion of saliva takes place under the influence of the fifth, the facial, and the sympathetic nerves. The real secretory nerve is the chorda tympani. After section of this nerve, or after it has been paralyzed by atropin, the secretion of saliva stops completely, although the amount of blood passing to the gland is unaltered. The influence of the sympathetic is vasomotor; the lingual nerve acts reflexly upon the facial nerve by way of the maxillary ganglion.

Eckhardt proved that irritation of the fifth and the facial produces a watery saliva, poor in organic constituents; while irritation of the sympathetic produces saliva quite rich in organic constituents, thick, and ropy. These experiments are confirmed also clinically, for states of irritation of the trigeminus sometimes are attended by secretion of a thin, watery saliva, while in excitation of the sympathetic, as in pregnancy, sexual and gastro-intestinal diseases, there is increased secretion of a thick saliva.

Stark has reported cases of insanity which so far corresponded with the physiologic experiment, that a thin, watery flow of saliva was simultaneous with exacerbations of a neuralgia of the fifth nerve; a thick saliva accompanied states of sexual irritation; so that the quality of the saliva is an indication, in some cases, of the idiopathic or sympathetic significance of the disease-picture.

Investigations by Owsjannikow, Lépine, Bacchi, and Bochefontaine, according to which irritation of certain parts of the cortex of the cerebral hemisphere increased the secretion of saliva, require still further confirmation. However, they explain the frequency of an increased flow of saliva in certain affections of the forebrain (psychoses).

MENSTRUATION.—Disturbances of this function are frequent in insanity. They are the expression of constitutional (anemia) or local disturbances of nutrition, or of disturbances of vasomotor innervation, that may stand in genetic relation with the causal moment of the psychosis or the fundamental pathologic process in the brain.

While in the secondary stages of insanity, aside from local or general diseases, disturbances of menstruation are regularly wanting, anomalies of this kind are very frequent in the primary stages of insanity. As a rule, in such cases, there is a temporary or lasting amenorrhea; and, in case it be lasting, the return of the menses usually takes place only with restoration of physical health. Sometimes amenorrhea continues a long time after the establishment of convalescence. In some few cases where sudden suppression of the menses has coincided with the outbreak of a psychosis the return of the menses may be devoid of critical significance; for both may be the effects of the same cause, and the suppression of the menses not the cause of the psychosis.

CHAPTER XIII.

Disturbances in the Domain of the Vital Functions.

TEMPERATURE.—On the whole, it may be said that the psychoses are afebrile brain diseases; still, not infrequently they present deviations of temperature from that usual in the healthy, and a deviation may be either an increase or decrease.

Late investigations by Eulenburg and Landois demonstrate the influence of superficial destruction of certain cortical areas (anterior central convolution, anterior extremity of the gyrus fornicatus) upon the temperature, and suggest that in affections of the cortex (psychoses), alterations of temperature are quite possible. In general, superficial injuries of the cortex, as well as strong faradic irritation of the parts mentioned, induce elevation of temperature on the opposite side of the body (Eulenburg, Hitzig), while weak faradic stimulation of the areas causes lowering of the temperature.

Ripping observed increase of temperature on the opposite side of the body in a case of sarcoma affecting the posterior part of the gyrus fornicatus; also differences of the temperature of the two sides of the body as great as 0.9° C. in mania, melancholia, melancholia with stupor, and dementia para-

lytica, simultaneous with other neurotic symptoms (ptyalism, unequal pupils, unilateral sweating, facial paralysis).

Increased temperature, with exclusion of complicating diseases of the vegetative organs, may depend on irritative processes in certain areas of the cortex. This is observed in congestive, paralytic, and epileptic attacks; in acute delirium and delirium tremens; in the *status epilepticus*, and the agony of the insane. In constitutionally neuropathic and other very weak patients constipation or retention of urine may induce a rise of temperature to 40° C., without causing any disturbance of general feeling, and the thermometer alone discloses the trouble. More frequently subnormal temperature is observed in the insane. For the most part, this is due to increased loss of heat (naked, raving patients; paralytics with general paralysis of the vascular system). In many patients (melancholia with stupor and the passive form), where all loss of heat is prevented by keeping them in bed and well covered, subnormal temperatures as low as 36° C. are still observed, which can be explained only by lessened production of heat, decreased tissue-metabolism, and incomplete respiration.

Too, in the maniacal the increased loss of heat usually overcomes the increased production of heat resulting from excessive muscular activity.

True collapse temperatures as low as 23° C. have been observed by Lowenhardt and Zenker a long time before death in cases of mania leading to exhaustion. In these cases the patients had feelings of euphoria and an excellent appetite. I have made similar observations in cases of paralytics some days before death, who were in bed and well covered and with temperatures in the rectum as low as 24° C.

PULSE.—The qualitative anomalies of the pulse were mentioned in connection with vasomotor disturbances. The frequency of the pulse is very changeable. Great frequency is sometimes observed in states of excitement, especially in cases of fear, and is here referable to the psychic excitement. The increase of the heart's action in the maniacal is often remarkably slight, in spite of the great unrest and jactitation of the patients. It may even happen in these cases that the pulse is lowered to 40 beats—probably to be explained by abnormal irritation in the path of the vagus, and sometimes as due to states of profound inanition.

DIGESTION AND ASSIMILATION.—Digestion and assimilation are frequently disturbed in the acute and primary states of insanity. Disturbances of these functions are not infrequent causes of the disease; more frequently they are complications *(vide supra)*, and sometimes the results of fasting.

RESPIRATION.—Disturbances of respiration are most common in melancholia.

They may be due to precordial anxiety and neuralgias. The respiration is then superficial and insufficient. Tuberculosis of the lungs often develops as a result of insufficient respiration.

Peculiar intermittent and remittent and arhythmic respiration, resembling the Cheyne-Stokes phenomenon, has been observed by Zenker in connection with cerebral attacks.

General Nutrition. Body-weight.—The relations of metabolism and general nutrition in the insane are of great importance, the approximate measure of which is the body-weight.

Investigations of this kind justify the conclusion that the graver disturbances of general tissue-metabolism go hand in hand with psychic diseases, and that the majority of psychoses are nothing more than an expression of profound disturbances of nutrition in which the brain is involved, and in which a predisposition of this organ, as *locus minoris resistentiæ,* places disturbances of the psychic functions in the foreground of the disease-picture.

By the investigations made by Albers, Nasse, Lombroso, Stiff, and others, it is shown that in melancholics and maniacs an increasing loss of weight accompanies the psychic disease-processes at their height; that, in general, remissions are accompanied by increase of weight, exacerbations with loss of weight; and that with the occurrence of convalescence there is usually a rapid increase of weight. In some cases the increase of weight was as much as one-half pound or more daily. The absolute increase Nasse reckoned on an average as 21.6 per cent. in insane females, and 15.8 per cent. in males.

If primary psychoses pass over into secondary states of mental weakness the usual weight is regained and remains quite stationary.

Increase of weight in cases which result so unfavorably is not constant. In cases where it occurred it was steadier and slower than in cases that progressed to recovery. Too, in periodic insanity paroxysms and loss of body-weight occur simultaneously, and the two progress together. Improvement takes place with the beginning of increase of weight.

The great significance of increase of body-weight (as much as twenty-nine kilograms) in recovery from puerperal insanity has been emphasized by Ripping.

Sleep.—Disturbances of sleep are frequent in the insane, and almost constant in the primary stages of insanity. In melancholia and mania sleep may be absent for weeks at a time. In melancholics sleep is not refreshing, and the patient then thinks that he has not slept or compares his sleep with that induced by narcotics.

In the secondary stages of insanity sleep is usually normal, unless disturbed by intercurrent states of excitement, especially by hallucinations. In profound dementia and brain exhaustion after mania, sleep is often unusually long and deep.

PART SECOND.

The Causes of Insanity.

THE discovery of the causes of insanity is one of the most important tasks that confront scientific investigation. The study of them leads the way to pathogenesis and prophylaxis.

An evil like insanity; affecting seriously both the individual and society, early led to investigation of the conditions that give rise to it. The following exposition of our present knowledge of its etiology will show that investigations in this direction have not been without fruitful results; indeed, the etiology of insanity is even better known than that of most other diseases, in spite of the fact that in this domain we have very great difficulties with which to contend.

The difficulties are, in the first place, due to the fact that, as a rule, a number of causal factors work together to induce the resultant insanity. To determine each one of these factors, and especially the value of each, is scarcely possible, owing to the lack of clearness of knowledge concerning pathogenesis.

With respect to a number of causal factors that are general in their effect, the aid given by statistics cannot be dispensed with. They are of great aid in etiologic investigation, but only when the question is correctly and precisely stated and there is careful and unprejudiced use of the raw material of statistics. Moreover, statistics never give the cause of a phenomenon, but only show the direction in which the cause is to be sought (Hagen). The figures obtained must be correctly interpreted.

For example, from the statistic fact of the greater number of female patients in insane asylums it is not to be concluded that the female sex exhibits a greater morbidity than the male. The principal cause lies rather in the lesser mortality of the female insane.

Only too frequently does it happen that the laity and inexperienced physicians regard the last and striking link in the chain of causes as the only cause, and thus ignore the effect of all previous and less prominent influences. Loss of business, emotions, and the like are looked upon as causes, when actually scientific investigation shows that hereditary and weakening diseases were the true etiologic factors upon which the former acted, and thus were effective in bringing about the catastrophy.

Only too frequently does it happen that results or symptoms of mental disturbance are mistaken by the friends for the cause of the disease. A busi-

ness man in the initial stages of paralysis makes unfortunate speculations. Then the origin of the disease, which soon becomes manifest to the laity, is ascribed to bad speculations, while scientific investigation of the case proves that the individual made bad speculations because his brain was diseased.

A maniac may be said to have become insane because of excesses in alcohol; exact investigation shows that this individual indulged in these excesses because he was suffering with maniacal exaltation.

A peasant's wife returns home from a religious meeting and becomes maniacal; it is thought then that religion made her insane. In reality, already insane and melancholic, she went there to find forgiveness for her supposed sins.

The mistaking of the symptoms or the results of disease for causes is an everyday event in the observation of alienists, and therefore warns him to accept the statements of the laity with great circumspection.

The history must take into consideration the general mental and physical individuality, for often mental disturbances are only final results of all previous states of life and development. For we have here to deal not with disease that may be precisely described anatomically, but with the abnormal individual (Schüle). The exact physical and mental condition of the patient; the habitual state of health; any possible abnormal dispositions and previous diseases; the original disposition; the development under education; the inclinations, tendencies, and circumstances of life of the individual; the form of reaction to external influences and injuries—all these must be carefully investigated before we can think of determining what the etiology is in the concrete case.

As a rule, however, it is not sufficient to know the individual history of life and development; usually we must go further to the physical and mental peculiarities of progenitors, for, with the exception of tuberculosis, there is no disease that is so far grounded in heredity, in physical and mental anomalies of organization, and in the life and conditions of progenitors, as insanity.

Unfortunately with reference to this important etiologic question, the answer is only too frequently unsatisfactory, since often we have to deal with persons born out of wedlock, with those of the lowest classes who know nothing of their ancestors, or with individuals of the higher classes of society that conceal unfortunate hereditary circumstances.

Finally, exact statistics must consider that the juridic sentence is not always applicable in natural science: *"Pater est quem nuptiæ demonstrant!"*

The etiology of mental disease is essentially that of other cerebral and nervous diseases, and therefore they belong to the same pathologic family. A superficial consideration of the causal elements divides them into two large groups:—predisposing, or, more correctly, exposing; and accessory—*i.e.*, exciting and often accidental. A sharp distinction of these two classes in the concrete case, however, is not always possible, since a predisposing cause (hereditarily abnormal brain organization, improper training) may also be at the same time the exciting cause, in that it leads to affects, passions, and perverse manner of life, which cause the ultimate outbreak of insanity.

In general, experience teaches that predisposing influences are of much greater importance than accidental causes, and are of themselves sufficient to induce insanity.

In the class of predisposing causes there are again general factors to which a certain statistic and minimal value, in their influence on the individual, must be given, and certain purely individual influences depending upon the physical and mental disposition of the patient and his circumstances of life, the significance of which is very much greater than that of the general factors.

Accessory or accidental causes are usually divided into physical and moral: a distinction which has but a superficial value for classification, and is only justified when it recognizes that every moral cause is physically effectual, whether through an organically founded predisposition, as a result of which it operates effectually as shock; or whether it operates directly to disturb the nutrition of the brain and thus induce the psychosis by its effect upon the vasomotor innervation, or indirectly by way of disturbances of the processes of general nutrition.

Predisposing Causes.

1. General Predisposing Causes.

Civilization.

A phenomenon that seems to be proved by the statistics of almost all nations and asylums is the increasing frequency of insanity in modern times.

Medical science asks:—

(a) Is this increase of mental diseases actual or only apparent? And, in case this is answered in the affirmative,

(b) By what factors is it induced?

(a) With reference to the first question it must be taken into consideration that exact figures for the comparison of more ancient times with later periods are wanting; that the statistics of insanity and the number of insane of earlier decades leave much to be desired as far as exactness is concerned, while to-day the improvement in diagnosis and greater care of the insane bring more patients under observation; further, that the careful management of patients in asylums prolongs life, and therefore they increase in number there; finally, that the general population has much increased. But all these sources of error are not sufficient to explain the fact that in all civilized countries the number of insane has almost doubled: in England, for exam-

ple, from 14,500 in 1849 to 30,000 in 1866. This drives us to conclude that actually there has been an increase; and, if this increase has not been as great as it seems, still it has been sufficient to cause apprehension.

(b) Increasing civilization has been held responsible for this augmentation; and it has been pointed out that, among uncivilized or half-civilized peoples, insanity is a very infrequent phenomena, while actually there is at least one insane person to every five hundred sane in the highly civilized nations.

An attempt has been made to explain the relative immunity to insanity of uncivilized people by circumstances of life in which there are no political or religious storms and no refined pleasures of life, but a simple and more natural method of living; but all these factors are in themselves of little value as long as parallel statistics of insanity among uncivilized and civilized peoples are wanting, and our knowledge of insanity among the uncivilized is confined to occasional mention in books of travel by naturalists and missionaries. Certainly estimates of the number of the insane, which make but an accidental impression upon the laity, are not the figures of the expert, and consequently they are doubtless much below the actual number. According to the testimony of Griesinger, many insane patients go about in the Orient as saints and beggars.

But, even when we allow the fact of the increase of insanity in modern society to be dependent upon factors that are included in the word civilization, we are still forced to resolve this factor into its elements, and to bring up a number of etiologic questions, the answers to which are difficult and possible only with the help of careful and extensive statistics.

Unquestionably some of the conditions of increasing civilization are really unfavorable to the origin of insanity.

Among these are to be mentioned better food, dress, and housing, education of the people religiously and intellectually, finer cultivation and greater morality.

But along with these regenerating influences there are other immediate outgrowths of civilization that are dangerous, owing to their effect to favor the occurrence of insanity.

Among these are the enormous growth of population of great cities, with the resultant evil influences, hygienically (tuberculosis, scrofula, anemia) and morally; the increase of a mentally and physically degenerate proletariat; pauperism; predominating factory life; lack of marriage; the increasing intellectual and morally destructive craze for riches and luxury.

But all these factors are surpassed by the circumstance that increasing civilization creates refined and complicated conditions of life, and thus leads to greater struggle for existence.

This struggle for a more comfortable and therefore more exacting existence must be carried on by the brain.

In this struggle the brain becomes finer in its organization, and therefore more creative; at the same time it becomes more vulnerable and is more reactive to stimuli which only too easily lead to overstimulation, with consequent exhaustion, disease, and degeneracy. When an organ is forced to increased functional activity, it is more readily diseased, is more easily exhausted, and strain upon it is only too easily changed to overstrain. These increased demands of the struggle for existence exercise their effects to-day upon the brain of the individual even at the desk in school, and the concurrence of all these influences in the domains of art, science, and industry, with the desire for luxury and riches, keeps a great part of modern society in a condition of constant nervous strain and excitement.

Another important factor which runs parallel with the increased use of nervous force is the need of certain stimulants that have an influence to increase brain activity artificially.

The increasing use of coffee, tea, tobacco, and alcohol is certainly no accidental phenomenon, but more or less a measure of the increased work which the brain must do to-day; even though some degree of health is compatible with indulgence in such stimulants, it is not possible with over-indulgence in them. Of all such stimulants, the most important and the one most frequently used to excess, and, therefore, the most dangerous, is alcohol. In the struggle of civilization with the Indians of America, as fire-water it has been a more powerful means of subjugation than even the weapons of war. It is true that our forefathers perhaps drank a greater quantity of alcoholic beverages than we do, but they drank wine containing a smaller percentage of alcohol. To-day alcohol is found in more concentrated form, and it has been made cheaper and therefore within the reach of everybody. But the alcohol within the reach of the lower classes is the poorest sort, usually containing fusel oil, one of the most injurious substances in its effect upon the central nervous system.[1]

In this fact alone lies a factor which easily outweighs all that civilization is doing for the prevention of insanity.

All experience shows with great probability that insanity is a phenomenon constantly increasing in frequency in modern society, and that it arises from overstimulation of the brain as a result of overexertion and intemperate use of stimulants.

These injurious influences show themselves immediately in the predominance of the neuropathic constitution in modern society, "which has too many nerves, but too little nerve." This neuropathic constitution forms the most important predisposition, not only for insanity, but for all possible neuroses. It is partly acquired as a result

[1] The enormous difference in the effect of ethyl and amyl alcohol is best studied in their nitrites. Ethyl nitrite is a weak, spirituous fluid the fumes of which scarcely affect the vascular system, while amyl nitrite, even in the smallest doses, induces complete paralysis in the carotid system of vessels.

of some perverse manner of life in the individual, partly congenital and due to the manner of life of progenitors.

The influence of the political upheavals and religious excitement in modern social life is relatively small. Of like importance are other accidents that affect populations at large (earthquakes, hunger, financial catastrophies, fires, etc.). As a result of such accidents those individuals first succumb mentally who, on account of their predisposition, are not able to withstand the disturbing, depressing effects of fear for their lives or for the lives of relatives; they are not equal to enduring the fright and excitement of war, the want of food, and other deprivations resulting from lack of employment.

The leaders of revolutions become insane with relative frequency. This was shown during the Commune in Paris. The explanation of this is that frequently those hereditarily predisposed and eccentric take a prominent place at the head of such movements.

Nationality, Climate, and Seasons.

These factors are also complicated. In particular, the idea of nationality includes in itself race, manner of life, employment, government, religion, and the various degrees of civilization and morality.

Moreover, the statistics of insanity of various countries are not of uniform exactness nor gathered from the same standpoint, and therefore they are not scientifically satisfactory. Still, on the whole, the percentage of the insane among the various civilized peoples does not vary strikingly; and the same holds true of peoples inhabiting the warmer and colder zones.

Any tendency to frequency of insanity in the warmer climates is compensated for among dwellers in more northern lands by the consumption of alcohol. In many countries where miasmatic and telluric influences are effectual and lead to cretinism, there are not only more insane, but a larger fraction of the population is afflicted with psychic (dementia) and physical defects (goiter). Too, the influence of insufficient and imperfect food makes itself apparent, aside from the increase of scrofula, rickets, tuberculosis, and pellagra (most frequent among the peasants of northern Italy, who live on corn), in constitutional anemia and neuropathic and psychopathic conditions dependent upon them.

It has been quite generally supposed that summer predisposes more to insanity than the cooler seasons. It is a fact that, in countries where the population is largely engaged in rural pursuits, the number of patients admitted to asylums during the summer months is greater, but the majority of these patients are those that have been long diseased, whom during the winter months the relatives are able to

take care of without much trouble, while in the summer, owing to increase of work, they are compelled to send them to the asylum.

In our temperate climate the heat of summer has nothing more than a bad effect upon patients that are already afflicted, and seldom causes mental disease directly.

Sex.

Older investigators, like Esquirol, Haslam, and others, supposed that there was a greater disposition to insanity in females than in males.

The dangerous periods of pregnancy, childbirth, and the climacteric; the fact that physically and mentally woman has less resistive power than man; and, further, the fact that insanity is inherited more frequently by female descendants, seem *a priori* to favor this assumption.

These fruitful causes of insanity in the female sex, however, are amply outweighed in the male sex by over-exertion in the struggle for existence, since, for the most part, man must carry on the struggle alone; and drunkenness and sexual excesses are much more disastrous in their influence on men than upon women. If women be forced to carry on the struggle of life alone, as is the case with many widows, they then succumb much more quickly and easily than men.

The source of insanity in woman that should not be underestimated is her social position. Woman, who, owing to her nature, has many more sexual needs than man, at least in the ideal sense, knows no other honorable gratification of them than marriage (Maudsley).

This offers her also the only means of protection. Through unnumbered generations her character has been developed in this direction. Even the little girl plays "mother" with her dolls. Modern life, with its increased demands, offers constantly less prospect of satisfaction in marriage. This is especially true for those of the higher classes, where marriages are consummated later and less frequently.

While man as the stronger, owing to his greater intellectual and physical strength and his free social position, finds sexual gratification without trouble, or an equivalent in some occupation in which all his force is demanded, these possibilities are denied to women of the better classes. This leads consciously or unconsciously to dissatisfaction with self and the world and to abnormal complaints. For a long time in many cases a substitute is sought in religion, but in vain. Out of religious enthusiasm, with or without onanism, is developed a host of nervous complaints, among which hysteria and insanity are not infrequent.

It is only by this fact that we can understand the great frequency of insanity in single women from 25 to 35 years of age,—*i.e.*, at the period when bloom and hope disappear,—while in men insanity is most frequent from 35 to 50, the period of greatest strain in the struggle for existence.

The statistics of asylums largely show the predominance of female inmates. One reason for this has already been alluded to in the lesser mortality among them, owing to the infrequency in them of idiopathic disease like dementia paralytica. Another cause lies in the fact that insanity in females is, in general, clinically more turbulent and indecent in form than in man, and therefore it necessitates more frequent commitment to an asylum. Too, the circumstance that the female population is somewhat greater than the male is to be taken into consideration.

On the whole, statistics show that the frequency of insanity in both sexes is about the same; that, if anything, it is slightly greater in the male sex, owing to drunkenness and greater demands upon cerebral activity.

Creeds.

Statistics have been collected with great care to show the percentage of insanity in the various religious sects, and it has been shown that among the Jews and certain sects the percentage is decidedly higher. This fact stands in relation with religion only in so far as it constitutes a hindrance to marriage among those professing it; the more when its adherents are small in number, and there is consequent insufficient crossing of the race and increased inbreeding.

This is a phenomenon similar to that observed in certain highly aristocratic and wealthy families, whose members, either from motives of honor or money, constantly intermarry, and thus have many insane relatives. In such cases the cause is not moral, but anthropologic.

On the whole, it may be assumed that true religion and pure ethics, in that they elevate the mind of man, direct it to higher aspirations, and offer comfort in misfortune, lessen the danger of insanity.

But it is otherwise when the religious inclination finds expression in enthusiastic, mystic, or zealous activity, behind which low passions are concealed.

Even under such circumstances, it requires a very strong predisposition in order to make the factor in question an exciting cause. Many of those who lose their heads in the confessional or in mission work are melancholic, weak-minded persons. Many of those who seek protection and comfort in the haven of religion are storm-tossed wrecks on the sea of life, physically and morally broken.

Very often excessive religious inclination is itself a symptom of an originally abnormal character or actual disease, and, not infrequently, concealed under a veil of religious enthusiasm there is abnormally intensified sensuality and sexual excitement that lead to sexual errors that are of etiologic significance.

Civil Condition.

Insanity is much more frequent[1] in the single than in the married, the explanation of which Hagen finds in the circumstance that in the population at large there is an excess of persons of unmarriageable age; in the fact that at this period of life there is greater possibility of becoming diseased; that usually any previous mental disturbance renders marriage more difficult; and, finally, that the better hygienic conditions of married life and regular sexual relations exert a prophylactic influence.

On the other hand, however, the married state may create dangers for the mental health, in that the characters of the husband and wife may not be congenial; that the need to support a family makes greater demands upon the mental and physical activities; and that misfortunes of all kinds may change the struggle for existence to despair. Faults of character, expensive habits, coquetry, vexations, and possible uterine disease and hysteria in the wife may destroy the husband's peace of mind; while brutal treatment, drunkenness, and unfaithfulness on the part of the husband may affect the wife.

A form of insanity peculiar to wives, not infrequently occurring outside of asylums, that is often a source of family misfortune, is described by Brosius. It is manifest in a chronic painful depression, with great irritability toward the husband, even to the extent of violent expressions of anger. This depression of feeling is founded on groundless complaints of aversion and unfaithfulness on the part of the husband. The husband and his supposed favorites are exposed and scolded. Jealousy and anger make these wives spies. Their formal logic and the possibility of the truth of their complaints deceive the public as to their abnormal state of mind, even when the recklessness of their conduct is remarkable enough.

Age.

Age, in its relation to the possibility of the occurrence of insanity, varies extremely.[2]

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[1] Hagen, "Statistische Untersuchungen":—

Male: 61.0 per cent. single, 35.8 per cent. married, 2.5 per cent. widowers or separated.
Female: 54.9 per cent. single, 33.6 per cent. married, 11.1 per cent. widows or separated.

[2] Hagen, *ibid.* Insanity under the age of 15 is very rare (1 to 72,752 inhabitants; and 35 males to 7 females). The percentage rises quite rapidly from this age in both sexes (from 16 to 20 years—1 to 4010 inhabitants), and continues about equal until 35. From 36 to 45 it maintains about this percentage in men, but decreases almost one-half in women. After 46 the percentage falls about equally in both sexes.

As Tigges says, these facts show insanity to be an organic process, mainly associated with inner life-conditions in the individual and accompanying his development.

From this it follows that the breadth and nature of the disease-picture must correspond exactly with the height of development of the mental life of the individual.

(a) CHILDHOOD.—Mental disease in childhood—*i.e.*, from birth until the time of puberty—is an infrequent phenomenon. This is to be understood by consideration of the incompleteness of the development of the mind of the child, and the lack of a great number of injurious influences that affect the brain of the adult (struggle for existence, emotions, passions, excesses, etc.).

The etiologic factors in the mental diseases of childhood are almost exclusively organic and somatic. In the vast majority of cases we have to deal with hereditarily predisposed organizations that were already defective in their embryonic stage of development. Insanity, therefore, appears for the most part in a congenital form; as idiocy developed in the earlier years of life; as moral insanity; or it occurs in association with neuropathic conditions like chorea and epilepsy.

Along with the original neuropathic constitution, other important etiologic factors that are frequent and early are onanism, acute, severe, and especially infectious diseases; external head injury; mental overexertion; and, in a few cases, irritation by worms. Psychic causes, like passions and defective education, play a very small rôle in the etiology of insanity in children. The former do occur, and sometimes lead to suicide; but they pass away more quickly than in the mature. More important as an exciting cause is fright. Thus is explained the fact that the insanity of childhood, even when it occurs aside from the degenerate forms of intellectual and moral imbecility, or epileptic mental disease, usually takes the form of an organic, idiopathic disease. In consequence its prognosis is usually unfavorable; but it is rendered even more so by the fact that insanity affects a mind that is still undeveloped, and this endangers in a great degree further psychologic and organic development.

The undeveloped state of the ego does not permit the occurrence of the great number of forms of insanity that are observed in the mature.

Maudsley and Schüle have shown what forms are possible at the various stages of development of the mind of the child, and also those that actually occur.

During the early period of life, just as in animals,[1] only sensorimotor, maniacal, and impulsive forms of insanity are possible (cases reported by Maudsley). With the development of the higher senses, forms of insanity with hallucinations occur which have their origin in febrile conditions, like the acute exanthemata, or result from chorea or epilepsy.

With the development of the intellectual sphere the conditions for the origin of delusions arise. Still, in childhood systematic delusions, like those characteristic of paranoia in the adult, do not occur, even though the beginning of this form of disease (fantastic delusions as the substratum of later fixed ideas) may sometimes be traced back to the earliest years of childhood. Too, the insanity of imperative ideas often takes its origin before the time of puberty.

Melancholia and mania are infrequent and are almost never founded upon emotional states, but rather upon organic conditions (Schüle). The former occurs as melancholia with stupor, often with impulsive acts like suicide; the latter occurs as a state of excitement characterized by impulsive movements, grave disturbances of consciousness, great confusion of thought almost devoid of associations, and is usually the result of direct organic causes (fluxionary cerebral hyperemia), and sometimes of a defective (idiotic) brain.

(b) PUBERTY.—At the age of sexual development the percentage of insanity increases rapidly. As in all the physiologic phases of life, the hereditary factor here constitutes the greatest predisposition. According to Hagen's investigations, in those that are hereditarily predisposed the percentage is the highest from the age of 16 to 20.

According to my own experience, females are more predisposed than males, probably because the hereditary factor plays a more important rôle in woman, and the period of evolution in the female is more momentous, and is frequently accompanied by grave disturbances of nutrition (anemia, chlorosis).

Upon the basis of hereditary predisposition the accessory factor of development at puberty may induce insanity in various ways.

In many cases onanism is a factor which, in predisposed individuals, arises very easily as a result of the abnormally premature and powerful sexual impulse, and thus becomes an exciting cause. In females at this time abnormal position of the uterus or lack of development of that organ from an infantile state, devoid of influence until this period, may act directly through sympathy and reflex influence upon the cortex; or they may act through the intermediate conditions they induce, such as general disturbance of nutrition (anemia, chlorosis). Not less important are abnormally rapid growth and arrest of development of the skull.

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[1] Thus, maniacal paroxysms are not infrequent in elephants; and a case of a cow that became maniacal after dropping a calf is reported in Henke's journal.

In other cases we are unable to discover the manner in which puberty acts. Not infrequently the psychosis disappears with the regular establishment of menstruation.

The various mental diseases occurring at this period of life, owing to the varied nature of the pathogenesis, are extremely numerous. As might be expected from the dominating influence of hereditary predisposition, the degenerate forms of insanity play the most important rôle. Paranoia, insanity of imperative ideas, periodic and circular insanity, and constitutional melancholia not infrequently begin at this time, and moral insanity is also notable as frequently beginning at this period.

Melancholia and maniacal cases also occur, but less frequently in the benign form of a psychoneurosis with an emotional manner of origin (usually as a result of fright); rather as primary and direct organic conditions similar to those that occur in children.

Melancholia occurs in the grave stuporous form, or with impulsive acts, imperative ideas, and hallucinations that are directed toward the person's own life; still more frequently toward incendiarism. This latter tendency has given rise to the erroneous distinction of so-called pyromania at the age of puberty. The maniacal forms, for the most part, take on moria-like features, and are likewise very impulsive.

At the same time, not infrequently, especially in cases where the growth of the skull and brain has been interfered with, we observe grave states of fluctionary mania, or states of delirium and hallucinatory excitement with all the symptoms of brain hyperemia, with rapid course, and ending, for the most part, in lasting states of mental weakness. For at this age, all idiopathic forms of mental disease are exceedingly dangerous in that they interfere with the further development of the brain.

Too, epileptic and hysteric insanity develop with especial frequency at the age of puberty. Upon an hysteric basis are observed the mild chronic manias, usually with an erotic nucleus (desire to enter a cloister, etc.); also episodic—partly hallucinatory, partly cataleptic—states of insanity; and finally cases of religious paranoia.

Kahlbaum and Hecker describe a juvenile form of disease under the term hebephrenia that occurs especially during the years of puberty, from 18 to 22, and passes frequently into dementia.

This form of insanity, besides the special period of its occurrence, is said to be characterized by the protean variations of its symptoms (melancholia, mania, confusion); by the great rapidity with which it passes on to a state of mental weakness; and by the peculiar form of the resulting dementia, the signs of which may be recognized in the first stages of the disease (silly, important manner). At the same time, the superficiality of the changing emotions is remarkable (laughing and joking at the height of melancholic depression); so that it would seem that the patient was playing with his anomalies of feeling.

During the phases of excitement there is foolish, purposeless activity and impulse to wander about, with the appearance of being conscious of the silly speech and action. Too, the form of speech of these patients is silly, consisting usually of high-sounding, but senseless, phrases. At the same time

there is preference for foreign words and strong expressions, incapability of expressing a thought in a concise form, and illogical formation of sentences and peculiar forms of construction.

Delusions are said to be infrequent, and when they do occur they are but rudimentary elements of ideas of persecution; but, as a rule, there are merely strange, silly thoughts. Occasionally states of excitement going to the degree of mania are induced by onanism, menstrual disturbances, and hallucinations.

The justification of regarding hebephrenia as a peculiar form of disease seems to me to be still questionable.

At any rate, it is a degenerate psychosis (puberty, protean form, impulsive acts, predominating formal and affective disturbances, primordial character of any delusions with unpleasant content, with or without very silly motives). The weak-minded silliness of the disease-picture is partly to be explained by the original weak-mindedness of the patient, which Hecker emphasizes in the etiology of his cases; and partly, as the author mentioned shows in his psychologic description of them, by the abnormal process itself, which begins, as it were, in the very earliest period of mental life, and thus sets a limit to further development of the mind.

In harmony with Schüle, who in 600 cases met but 2 cases of pure hebephrenia, I have found the psychosis in question to be very infrequent (8 cases in 3000). In all my cases there were decided hereditary predisposition, original mental weakness, and signs of degeneration. In 2 cases in females there was microcephaly. The prognosis is not absolutely bad. In 1 case recovery occurred, and in another lasting improvement was obtained.

Features of hebephrenic insanity are also noticeable in the mania that occurs at the time of puberty, along with the other characteristics of the psychoneuroses, and which runs a favorable course. Probably hebephrenia is only a form of pubescent insanity in general; a phenomenon dependent upon serious predisposition and the silly character of speech, writing, and conduct that belongs to the peculiar biologic phase during which pubescent insanity develops. That the same psychosis may take on peculiar features in accordance with the age at which it develops is shown by cases of melancholia and mania occurring in old age, which differ from similar cases occurring in youth or at maturity.

CASE 1.—Maniacal insanity at puberty with hebephrenic symptoms. Recovery.

Miss Z., aged 19, comes of tainted family; maternal grandmother was weak-minded; two maternal uncles died insane, one by suicide. Her mother's character was abnormal; one brother is an idiot. The patient was not so well endowed mentally as her elder sister; she developed slowly, both mentally and physically, and manifested from the beginning a retiring character, and was depressed by realizing that she was not equal to her sister in mind and appearance. The patient has never had any severe illness; menses began at the age of 17 without disturbance, and recurred thereafter regularly; since the beginning of puberty the patient has at times seemed somewhat elated, excited, and passionate. An old strict governess conducted her education, and sought to keep the girl in the nursery as long as possible, and childlike in mind.

In December, 1879, it was determined to introduce the young lady to society. She began with a journey to Italy. In January, at Naples, it was noticed that she became inconstant, excited, and elated; she began to take an enthusiastic interest in all that was noble and beautiful; she found the beauties of Naples charming, and began to busy herself with thoughts of marriage, for she must now become independent, since she was no longer a child, and up to this time had allowed herself to be led too much by others. She played the mother to her aunt and elder sister, and gave them good advice; but at the same time she was still child enough to play with other young girls occasionally, and to forget her project of acting and being a great lady. Her state of feeling alternated between supremely happy moods and depression and tearful anxiety about her health. The patient was very emotional, and the refusal of a wish was capable of throwing her into violent excitement. Though she was childlike in her thoughts and wishes, she still liked to attract attention by efforts to play the lady, and often with ludicrous pathos said that she would no longer allow herself to be treated as a child.

In June, 1880, before the period of menstruation, the disease which heretofore had been but slightly indicated increased to well-marked maniacal exaltation. She slept badly, became restless and talkative, showed constant activity of thought, and became amenomaniacal. She said that she was supremely happy, and found everything to be wonderfully beautiful; she sang, jumped, and danced, and at times was also religiously excited.

With the occurrence of the menses there was a return to the previous state. In the middle of July there was another premenstrual exacerbation, this time with erotic features. She thought that a young man whom the family had intended for her husband, but whom she had not seen since her sickness, was concealed in the house, and she was not allowed to see him. On account of this she scolded her relatives, became very much irritated, and sought her intended in every corner of the great castle. After a remission following the menses, with the return of them in August a marked recurrence of the disease occurred. She became very restless, exalted, and was in a state of constant emotional excitement. She would go into ecstasies over a dry twig in the park or a wild flower; she exhibited great variation of feeling, and expressed a multitude of rapidly changed wishes and desires; she became very talkative, with disconnected thoughts. From the beginning of August the patient took daily 4 grams of sodium bromide.

Her condition at the beginning of September, 1880, on the occasion of a consultation, showed nothing physically wrong, with the exception of continued, but slight, fluxion to the head, retarded menses, disturbed sleep, and complaints of occasional headache. Psychically there were symptoms of slight maniacal exaltation, which she was able to restrain under examination, with hebephrenic features. The patient talks without end, loses herself in tiresome details, and is hasty in her movements. Her state of feeling constantly changes from cloud to sunshine: now laughing, now weeping. She is able to control herself before strangers and in the drawing-room, but while walking in the forest she rolls in the grass sometimes for very pleasure. For hours at a time she walks very rapidly, so that one can scarcely keep up with her without fatigue.

The patient is a peculiar mixture of child and lady. It is noticeable that she is half-child, that she has been out of the nursery but a short time, while,

at the same time, she seeks to play the grand lady, and is not yet grown up to this rôle. She seeks to copy and pose, but is constantly showing her lack of ability; she seeks to cover up her failure by certain nonchalance and aplomb, but in this she becomes irresistibly funny and grotesque. Her manner of conversation also reveals the biologico-psychic state of transition in which she is. Her talk is inexhaustible and changeable, as is usual in one maniacal; and, owing to errors in expression and overfineness of speech, along with coarse and even slang phrases and strong language, her conversation acquires peculiar features; and this is also true by reason of curious trains of thought, wherein there is an association of childish and more mature remarks.

The patient is also in a peculiar transitory phase sexually from a child to a maid. She has notions of sexual relations, but seems still to be quite childlike. Her romantic love for her "lover," to whom she is engaged, is the result of sympathy of feelings, a childish, ideal passion, and nothing less than a conscious, passionate, earnest inclination.

In this it is evident that the childlike form is not yet completely destroyed, and the new not yet completely developed. Still more clearly is the hebephrenic coloring of the disease-picture expressed in the intimacy of the family and the letters of the patient. The patient gives her elder sister a superfluity of good advice, and comforts her by saying there will also be found a good husband for her; she plays mother to her aunt, and cautions her to take good care of her elder sister, that she may not lose her heart too easily; she writes long letters to her brother, telling him to be virtuous, as if she were his grandmother; and she writes in a silly strain to a friend and recommends a course of reading for her during the long winter evenings, telling her she must take the place of a mother to her sister; she takes pleasure in ordering about the governess and other servants, and grows angry when she discovers that she is not minded, or is called "dear child." "I have been too good; I must become more strict, else everything will go wrong in the house; I must be a man." At the same time she writes silly verses about the governess and laughs immoderately.

In September and October the patient becomes maniacally exalted, with some exacerbation at the time of the menses; she runs about in the house; seeks to place herself above everybody; is for the most part pleasant, but irritable and easily excited to anger at the slightest cause; at the same time she is disobedient and hard to manage; now seeming like one who has been devoid of all training, and at another time like a silly child. She runs about in the park, drums pieces on the piano, sticks to nothing, and does everything in great haste. She takes to writing many letters full of euphemious phrases and silly sentences. Her peculiar manner of speech and writing is noticed by those around her. She maltreats the governess, whose advice is refused, since she has ended her education. The patient takes pleasure in striking manners, and her poses become grotesque. Now and then there are hours of painful, morose depression and irritability (with expressions to the effect that she feels as if she had some one's head) in the amenomaniacal picture. Sleep is much disturbed; congestion of the brain is at times very clearly marked.

By the end of October the patient became quieter, and more orderly; the childlike features disappeared entirely; the patient acted more like a lady, but frequently enough complained of the nursery and of successful efforts to express herself elegantly; and coarse phrases and childish manner were still

observed. In November maniacal exaltation becomes less and the patient gains an idea of her condition. She is ashamed and tries to control herself; she becomes natural in feeling and thought, and gives up thoughts of love entirely. By the end of December her relatives consider the patient entirely well; but she has reached only the stage of development of a girl of 15 of good education. The congestive disturbances have entirely disappeared, and the menses are regular.

Later reports show that the mental development progressed to that of an adult without any anomalies whatever.

(c) AGE OF PHYSICAL AND MENTAL MATURITY.—The most favorable time for the origin of insanity is the age of complete physical and mental development—the period of life's storms, of the greatest physical and mental strain. In woman this is during the period from 25 to 35 years of age, for the reason that at this time, in single women, hope of love and life excite the emotions, so often deceived with the infliction of serious mental wounds, while, in married women, the weakening influences of childbirth and lactation make themselves felt.

In man the corresponding period is from the age of 35 to 50, because at this time the cares of occupation and family, and physical and mental effort in the struggle for existence, are most intense, and these, with excesses in drink and venery, exercise their exhausting influence on the brain. All forms of insanity occur during this period of "physiologic turgescence" of the brain, and of greatest intensity and variety of stimuli, but general paralysis is especially frequent.

Climacteric.—The period of involution in woman also constitutes a predisposing and exciting cause of mental disease.

Of 878 female patients of my observation, there were 60, or 6.1 per cent., in whom the climacteric was the cause of the disease. Influence exerted to cause disease may be psychic (painful consciousness of loss of social and ethic feeling based upon sexual feelings, especially in wives that are childless; painful recognition of the loss of physical charms); or it may be mixed, in so far as the abnormal general feelings accompanying the process of involution, and the traditional and not entirely unfounded fear commonly entertained of this dangerous phase of life, may shake the mental equilibrium. The climacteric may finally be the cause of disease in a somatic way, in that there is not simply a loss of function and final atrophy of the sexual organs, but a process of involution affecting the organism at large, in which there may be decided disturbance of functions until the normal equilibrium is re-established.

The special influences that are of importance in causing insanity at this period are profuse secretions (menorrhagia, leucorrhea) and resultant disturbance of nutrition of the psychic organ (anemia);

sudden suppression of the menses (*comp.* "Suppressed Menses"); neuralgia, and especially states of irritation in the genital nerves, with the consequent irritation of the central nervous system (irradiation, reflex).

The significance of these factors is intensified by organic and especially by hereditary predisposition, by weakening influences which precede or occur simultaneously with the climacteric (frequent childbirth, exhausting diseases; typhoid and other severe general diseases; local diseases of the uterus, especially chronic metritis and anomalies of position). Unless such accessory causes act simultaneously with the climacteric, it does not seem possible that they could cause mental disease.

Insanity at the climacteric does not present a specific form of disease; still it cannot be denied that the psychoses arising at this time may have somatic features in their beginning and course that clearly point to the climacteric as their basis; that sexual irritation induced by the climacteric process—partly consciously by way of allegory, and partly unconsciously by direct excitation of the cerebral cortex—may lend the disease-picture certain features that may indicate quite definitely the sexual basis of the malady.

Moreover, the frequently sexual content of the delusions points to the same thing (20 times in my statistics), as do hallucinations of smell (6 times), and states of reflex excitement of the sensory paths of the spinal cord which induce related delusions of physical persecution (10 times). The forms of disease observed in these 60 cases mentioned were acute delirium (1), circular insanity (1), paranoia with primordial delusions of persecution (36), paralytic dementia (12), and melancholia (4).

Climacteric melancholia presents features of senile melancholia; at least the nihilistic delusions dependent upon an invalid brain condition (poverty, general annihilation—often also with hypochondriac coloring) are ordinarily observed here. Too, states of terrible fear with danger of suicide are very frequent.

The establishment of a climacteric for the male sex, with the distinction of the psychoses that occur at this period (50 to 60 years), does not seem justified either biologically or clinically.

The reported cases of psychoses of the male climacteric clearly belong to the senile psychoses, and are explained by precocious senility.

(d) SENILITY.—Beyond the age of 50 the percentage of insanity falls rapidly in both sexes. On the other hand, in old age the senile involution of the brain arises as a new causal influence. In many cases this appears even before the age of 50 (senium præcox), when, in the struggle for existence, the powers have been used up, and excesses and severe constitutional diseases have made the individual decrepit abnormally early.

If this change occur with intensity and rapidity, be accompanied by fatty degeneration of the heart, arteriosclerosis, or atheromatous encephalitic focal disease of the brain, then a state of mental weakness is developed which, if life last long enough, progresses to complete dementia (dementia senilis; *vide* "Special Pathology"). The disturbances of nutrition and circulation that occur in association with senile involution predispose in a high degree to attacks of mental disease.

The forms of insanity that occur on the basis of an invalid and aging brain are melancholia, mania, and forms of delusional insanity. The organic, degenerative foundation gives these psychoses of the invalid brain peculiar features which distinguish them from the psychoneuroses of the same name affecting the youthful, unburdened brain.

They are distinguished by their severe organic, idiopathic character; by the accompanying sensory, vasomotor, trophic, and motor disturbances, reaching even the degree of apoplectiform and epileptiform attacks; by symptoms of mental weakness manifest in all directions. This weakness is manifest in the emotional sphere by superficiality of the emotions, in which, however, those that are organically induced, like precordial distress, may find powerful expression; in the intellect, by weakness of memory, incoherence, and loss of judgment. Any delusions that occur are only exceptionally due to reflection; as a rule, they are primordial. No less loose and weak are the expressions of will in these patients.

Melancholia on a senile foundation is agitated and errabund. The impelling factor is the affect of fear. This is only exceptionally reactive, associated with and induced by delusions and phantasms of the senses, but rather a primary and organically conditioned symptom. The motor reactions are impulsive unrest, destructive acts, especially biting the fingernails and scratching the skin. At any moment the affect of fear may increase to the extent of *furor*, and then such patients become very dangerous to themselves and others.

Effort on the part of the patients to explain the abnormal feelings are but infrequent, and when they do occur are silly.

Self-accusation is infrequent. In its place micromaniacal and nihilistic delusions occur, which, when completely developed, consist of negation of existence of self and others; indeed, of the world at large.

It is quite usual to meet with the delusion that everything has been destroyed, or that the patient is no longer able to pay his way, which gives rise to refusal of food; but, owing to the superficial character of the emotions, this is easily overcome, and a temporarily inordinate appetite takes its place.

Hypochondriac nihilistic delusions also occur (false body, false organs, false head, etc.). Disturbances of sensibility and general feeling and illusions are sometimes the foundation of these impossible delusions; as a rule, however, they are primordial creations of the brain that is suffering in its nutrition.

The manias which develop upon the basis of senile degeneration have grave idiopathic features. They resemble the picture of paralytic mania, in that they are characterized by purposeless plans, silly and busy occupation, senseless delusions of grandeur, and erotic excitement with loss of all moral ideas; by intellectual weakness and ethic defect in all directions; and at times the mania may increase to brutal, usually angry, *furor*, with symptoms of congestive cerebral hyperemia.

The pictures of delusional insanity as states of episodic or final inanition of the degenerating brain are peculiar in the predominance of nihilistic and largely hypochondriac primordial deliria, and their foolish content and hopeless incoherence. The reactive emotions are weak and foolish, if precordial anxiety does not intensify the situation to a dramatic height. In the latter case suicide and homicide are to be expected.

Otherwise childish fear of a terrible death, with a silly motive and reactive weak-minded monotonous screaming and crying, dominates the scene.

There may be hostile apperception and great mistrust of others; episodic frightful hallucinations of blood, general slaughter, coffins, corpses, gallows; abrupt deliria of poisoning, of the end of the world, etc.

These psychoses of the invalid brain have, of course, an unfavorable prognosis. As a rule, they are forerunners or episodes of senile dementia; only in a few cases does recovery take place without mental weakness.

Besides these senile psychoses in the narrower sense, in individuals whose brains have remained free from senile degeneration at an advanced age, benign psychoneuroses occur which do not differ from those that develop at an early period of life.

Occupation and Circumstances of Life.

These form a factor which, in spite of all efforts of statistics, is too complicated to afford satisfactory etiologic results.

Sailors, coopers, and teamsters frequently become insane, but the cause of this lies not so much in the calling, as in the alcoholic excesses usually associated with it.

In those working with fire caloric influences not infrequently induce insanity.

Governesses become insane quite frequently. Homesickness; unpleasant family and social relations that often drive these poor creatures away from home; insulting, harsh treatment; in general, depressing social position; disappointed love; over-exertion in work, appear usually as causes.

Prostitutes become insane not infrequently, probably as a result of over-irritation of the nerves by sexual excesses, drink, misery, and syphilis.

The lower classes are afflicted with the curse of poverty, social misery, insufficient food, bad homes, and the resulting scrofula, rickets, and tuberculosis; besides, often by excesses in alcohol, and that of the worst and most deleterious kind, and thus they easily succumb in the struggle for existence. In the higher classes, hereditary influences, nervousness, misdirected education, excesses of all kinds, passions, pride, etc., are equivalents.

Persons working with the head are more predisposed than those that labor with the hands; still, mental over-exertion is hardly capable of causing insanity in a mature person. In such cases there is always at the same time a neuropathic constitution, or trouble, care, and reverses at home, or trouble with superiors; or it may be the case of an individual, apparently the child of fortune, who by accident or favor has obtained a situation for which he is incompetent, and which, with mental overwork, loss of sleep, and the help of stimulants, he seeks to retain. The foundation for the psychoses that arise out of such excessive demands upon the brain are states of cerebrasthenia. If the vessels are abnormally pervious, acute delirium or paralytic dementia easily occurs. In the youthful individual they result in melancholia, acute dementia, and acute hallucinatory insanity.

The injurious influence of mental over-exertion upon the youthful brain still in a stage of development cannot be denied. It is only too evident that in our neuropathic age too much and too great a variety of work are demanded of the brain of the pupil, and the body is too little considered in schools. The schools are essentially nothing but preparatory schools for future philologists, and it is high time for reform in the method of education. Hasse has pointed this out; but he has actually over-estimated the injurious influence of this overburdening. In such cases there are always other predisposing and assisting causes (hereditary taint, neuropathic constitution, mental limitation, onanism, too strict discipline in school and at home, injured pride, lack of progress, etc.). Hasse's cases were essentially instances of mental exhaustion with symptoms of irritation.

The frequent occurrence of insanity in artists, poets, and noted actors has been observed.

The fine organization which renders such individuals, who are for the most part neuropathic, capable of extraordinary activities, seems to be accompanied by a lessened power of resistance of the brain to irritants. Perhaps, too, the constant nervous excitement of such persons, and irregularity in their manner of life, should be taken into consideration.

In soldiers homesickness, bad food, onanism, physical exertion, and brutal treatment by superiors are effective. The greater morbidity of officers is to be explained by excesses of all kinds, with ina-

bility, owing to strictness of discipline, to rest after debauches; the single state; degradation in rank; insults that must be endured, owing to discipline.

Still more considerable is the number of cases of insanity during actual war, due to consequent increase of wounds, hardships, etc.

The great wars of later decades have offered abundant opportunity of observation of such war-psychoses. Along with the ordinary psychoses, severe idiopathic forms of insanity, especially paralysis, with bad prognosis, predominate. The reason for this lies apparently in the fatiguing and exhausting influences of life during the time of war. Of the first importance is physical over-exertion due to lack of sleep, exposure to heat and cold, forced marches, bad housing, and often insufficient food, for which a substitute is sought in alcoholic excesses. Of next importance are the increased demands on the mental activities resulting from strict discipline in the face of the enemy, and the exciting impressions of battle. Besides there is anxiety about relatives, their support, homesickness, loss of relatives and comrades—all these mental factors intensified in a defeated army by the panic of pursuit, the patriotic despair at defeat and imprisonment; and finally the injurious influence of exhausting diseases, like typhoid, dysentery, etc.

The exhausting influence of war is clearly shown by Arndt's observation, according to which, during a war, in the majority of combatants, there is developed a certain nervous and mental irritability that leads to numerous excesses and insubordination, and that disappears only after months or years of rest. As phenomena of exhaustion, Arndt mentions great tendency to fatigue, inability to think, listlessness, inability to work in the usual way, with consequent dissatisfaction with self and the world, sleepiness and sleeplessness, great irritability, apprehension, tendency to fear, and indefinite hypochondriac thoughts even to the degree of *tædium vitæ*.

From these neurasthenic conditions it is but a step to actual mental disease. A slight accessory injurious influence may cause its development.

Imprisonment.

The great frequency of insanity among prisoners is a statistic fact. The causes of this lie not exclusively in the imprisonment, but essentially in the former manner of life and certain predispositions that affect criminals. Many criminals have suffered with unrecognized mental disease before the beginning of imprisonment. Many are organically burdened, or they are men predisposed by having lived a life of misery, degradation, filth, and sensuality, and in whom imprisonment becomes only an accessory cause of disease.

Other not unimportant factors that exert an influence before imprisonment are poverty, misery, qualms of conscience as a result of the criminal act, anxiety about success, fear of discovery and arrest, and the torture and misery of trial and sentence. To these are added the unhygienic conditions of prisons—lack of fresh air and exercise, lack of food, onanism—with the psychic influence of remorse, conscience,

longing for home and friends, and the too strict and often hypercritical discipline and treatment devoid of any individualization.

The majority of cases of insanity occur in the first and second years of imprisonment, and, according to Delbruck, 13 per cent. more among accidental (affect) than among habitual criminals.

The cause of this is found in the remorse and pangs of conscience in the former, while the latter remain morally blunted.

During the later years of imprisonment tolerance occurs, and a certain mental equilibrium is established.

There has been much controversy concerning the influence of various kinds of punishment (isolation and segregation). The old strict Pennsylvanian isolation, with absolute silence and absence of all stimuli from the external world, is to blame for many cases of insanity; but if isolation is humanely carried out,—*i.e.*, if consideration is had for the physical and mental needs of the prisoners,—then it has no more injurious influence than segregation. But applied to a case of developing insanity, it hastens the outbreak.

Nevertheless, isolation is not suited for every prisoner. For persons of very limited mental power that require the stimuli of the external world; for those that are suspicious, proud, and eccentric, and who, even in their ordinary life were not regarded as quite normal; and for others that suffer great remorse and pangs of conscience, it is dangerous (Baer). The forms of prison insanity are those that occur in ordinary life, modified by the peculiar hygienic, social, and disciplinary conditions of the prison.

Noteworthy modified forms that occur in accidental criminals, besides melancholia, are demonomania, nostalgia of emotional genesis (pangs of conscience), hypochondria (due to unhygienic influences of prison life), and a form of insanity occurring in isolation and beginning with hallucinations of hearing. The patients hear that they have been forgiven and the period of imprisonment is over. They ask querulously to be discharged, and are deluded in the belief—when their demands are refused—that they are unjustly detained. Delusions of persecution develop. At the beginning of the disease recovery takes place quickly if the prisoner is put with others; for the disturbance is one that is due to isolation.

In habitual criminals, who are, for the most part, organically burdened, besides weak-mindedness and impulsive acts, we observe moral insanity, epilepsy and epileptoid states, and forms of periodic insanity; and not infrequently, under the pressure of imprisonment and discipline, and as a result of the great irritability of such defective individuals, violent states of maniacal excitement with maniacal explosions occur.

2. Individual Predisposing Causes.

Heredity.

By far the most important cause of insanity is transmissibility of psychopathic dispositions or cerebral infirmities by way of heredity.

The fact of inheritance of psychic peculiarities and disease was known even to Hippocrates. It is but one of the manifestations of a

biologic law that plays a tremendous part in the organic world, and on which all mental advancement of the human race depends.

Next to tuberculosis there is scarcely any form of disease in which heredity makes itself so powerfully felt as in that of insanity; but there is some lack of harmony in the estimates of the frequency with which it occurs. Statistics vary in ascribing from 4 to 90 per cent. of all cases to heredity. Clearly, where there is such a considerable difference there can be no law. The cause of this difference can only lie in the various methods that are applied in the collection of statistics. Much depends upon the classes from which the statistic material is gathered. In aristocratic classes, in groups of individuals cut off from general intercourse in close religious societies (Jews, sects, Quakers) where inbreeding takes place, the percentage of heredity is much greater than in an interbreeding population. Too, the point of view of different statisticians is different. Many investigators have recognized heredity only when insanity was demonstrable in parents (direct similar heredity). But so narrow a conception of heredity cannot be entertained.

We have here essentially three facts to consider:—

(A) Atavism.—The physical and mental organization and peculiarities may be transmitted from the first generation to the third, without making their appearance in the intervening generation; thus, the life and health history of the grandparents is of interest.

(B) Only in rare cases is the actual disease transmitted by heredity (congenital insanity, hereditary syphilis); as a rule, it is only the disposition to it that is transmitted. Under such circumstances actual disease occurs only when accessory injurious influences make themselves felt.

Thus, we must investigate the health history of the blood-relations (uncles, aunts, cousins); and, since here the law of atavism is also operative, any diseases that have affected great uncles or great aunts should be considered.

(C) It is only exceptionally that one and the same disease in progenitors and descendants develops as a result of hereditary transmission of abnormal disposition. On the contrary, there is a remarkable changeableness of the disease-pictures that has almost the significance of a law (polymorphism or transmutation).

The transmutations are innumerable. The most various neuroses and psychoses appear in families affected with heredity, side by side and one after another, through generations; and they teach us that from a biologico-etiologic standpoint they are branches of but one and the same pathologic tree.

The variability of hereditary abnormal conditions makes it necessary to be careful in deciding to what states and forms of manifestation

of abnormal nervous life the hereditary transmission is joined, either directly or in a modified form.

(a) Without doubt, the cases in which psychoses in progenitors and descendants are observed (heredity) are of this nature. In many such cases the psychosis has in both generations the same form, and breaks out under the influence of the same accessory causes: *e.g.*, the puerperal state (similar heredity).

(b) Of similar nature is the phenomenon of suicide occurring through generations: *i.e.*, the disposition to suicide, which is almost always a symptom of melancholia or of a neuropathic constitution incapable of enduring the severe demands of life. Especially convincing are the cases of suicide where progenitor and descendant, under similar conditions and at about the same age, kill themselves. There are even genealogic tables that show how whole tainted families have died out through suicide.

(c) The hereditary influence of constitutional neuropathy, whether this consist of mere habitual migraine, or hysteria, neurasthenia, or epilepsy,[1] is unquestionable.

The injurious hereditary factor may express itself in descendants merely in a neuropathic constitution, in a neurosis, or in some psychosis up to the degree of idiocy—the severest form of hereditary degeneracy.

The hereditary influence of abnormal *character* in predisposing to insanity has been demonstrated.

Certain enthusiasts, perverted individuals, and hypochondriacs have not only very frequently mental and nervous diseases among progenitors and collateral relatives, but also neuropathic, insane, and even idiotic descendants.

These problematic individuals, who, for the most part, from childhood up, feel, think, and act differently from other persons, are constantly in danger of becoming insane, and are often candidates for the degenerate form of insanity *par excellence*—paranoia, which also especially affects their descendants.

That a criminal and vicious manner of life stands in hereditary relation to insanity is shown by the frequency with which insanity and other neurotic forms of degeneracy occur in habitual criminals and in

[1] Trousseau, Medicinische Klinik, 1867, page 88. Moreau found, among 364 epileptics, 62 epileptic, 17 hysteric, 37 apoplectic, and 38 insane blood-relations; 195 times, convulsions, consumption, scrofula, eclampsia, asthma, drunkenness, etc., in the parents and blood-relations. Martin, Annales médico-psychologiques, 1878, November, proves that the children of epileptics very frequently die of convulsions.

their blood-relations, progenitors, and descendants. Nevertheless, crime as a moral, and insanity as an organic, phenomenon remain opposites. The common points of contact lie simply in the fact that insanity may occur also in the clinical form of moral depravity (moral insanity), and is often erroneously taken for criminality.

Drunkenness must also be regarded as a link in the chain of hereditary predisposing factors. It is only infrequently that similar inheritance occurs here; it is usually unlike, in so far as the degenerate progenitors, as a result of alcoholic excesses, beget children that enter the world idiotic, hydrocephalic, or with a neuropathic convulsive constitution, and soon succumb to convulsions; those that live develop epilepsy, hysteria, mental diseases, and the severest forms of psychic degeneration, as a result of the abnormal constitution of the nerve-centers.

Thus, Marcé reports the case of a drunkard who had 16 children, 15 of whom died, and the only survivor became epileptic. According to Darwin, the families of drinkers die out in the fourth generation. Morel traces the degeneration as follows:—

First generation: moral depravity, alcoholic excesses.
Second generation: drunkenness, maniacal attacks, general paralysis.
Third generation: hypochondria, melancholia, *tædium vitæ*, murder.
Fourth generation: imbecility, idiocy, extinction of the family.

But the fact proved by Flemming, Ruer, and Demeaux in reported cases is wonderful—that even children of sober parents, when begotten at the time of intoxication, are in a high degree disposed to insanity and nervous diseases in general; this fatal influence may even make itself felt at the time of birth and give rise to congenital weak-mindedness.

Griesinger calls attention to the fact that genius is sometimes associated with hereditary idiocy. Moreau went so far as to call genius a neurosis. That men of genius not infrequently (Schopenhauer's grandmother and uncle were weak-minded) have insane and mentally defective relatives, and beget weak-minded and even idiotic children, is unquestioned. It seems as if a generally high and fine organization of the nervous elements in one case, under the influence of especially favorable conditions, leads to higher development; under unfavorable conditions, to mental degeneration.

Whether close blood-relationship is to be regarded as a degenerative factor is still a matter of dispute[1]; but experiments by breeders of animals, who, to be sure, breed from only the best animals, as well as

[1]According to Beauregard (Annales d'Hygiene, 1862, page 226), from 17 consanguineous marriages there were 95 children, among whom there were 24 idiots, 1 deaf-mute, 1 hunchback, and only 37 normal individuals.

the genealogy of the Ptolemies, speak against it. It is possible that it remains without influence so long as the individuals concerned are devoid of degenerate elements; but, if this is not the case, then rapid degeneration is certain.

According to Boudain's investigations, in marriages of blood-relations sterility and miscarriages are frequent, and descendants have slight power of resistance, and are afflicted with a lymphatic constitution, with commonly a disposition to scrofula and tuberculosis. Other frequent phenomena under such circumstances are monstrosities (superfluous fingers and toes, club-foot, harelip, etc.); albinism (which in animals may be produced experimentally by continued union of individuals of the same family); retinitis pigmentosa (Liebreich); congenital deafness, and in a proportional relation to the degree of blood-relationship of the parents. If the danger of begetting a deaf child in an ordinary marriage is reckoned as 1, then the danger must be reckoned as 18 in the marriage of cousins, 37 in the marriage of uncles and nieces, and 70 in the marriage of nephews and aunts, while direct transmission of deafness is rare (Ménière). Very frequently in the descendants of marriages of blood-relations mental diseases and epilepsy occur (Esquirol).

The significance of heredity in our domain becomes especially clear when the fate of families that have been subject to mental disease is followed through generations.

The following genealogic table is that of a family which came under my observation:—

First Generation.	Second Generation.	Third Generation.	Fourth Generation.	Fifth Generation.
Father insane / Mother healthy	Daughter, only child, became insane	1. Daughter insane	1. Child of first daughter, fate unknown	?
			2. Daughter insane	None
			3. Son—mania, demented	None
		2. Daughter healthy	7 healthy children	?
		3 Daughter insane	1. Son insane, suicide	None
			2. Daughter, demented	None
			3. Daughter afflicted with periodic insanity	None
		4. Daughter healthy	2 sons, history unknown	?
		5. Son insane	None	—
		6. Son insane	1. Son healthy	?
			2. Son insane	None
			3. Daughter healthy	Daughter insane
		7. Son healthy	3 healthy children	?
		8. Son healthy	5 healthy children	?

Of these 37 individuals descendants from insane ancestors, 13 are insane and 24 (?) healthy, though reports concerning some are wanting and others of them are still very young.

Finally, there can be no doubt that all influences that weaken the nervous system and the procreative power of the individual, whether too youthful or of too great age, previous weakening diseases (typhoid, syphilis, tuberculosis), mercurial cures, alcoholic excesses, over-exertion, etc., may give rise to neuropathic constitutions, and thus to all possible nervous diseases in descendants.

A glance at all the facts mentioned shows that, on the whole, insanity is a manifestation of degeneration, the conditions of which are to be sought in congenital abnormal disposition, transmitted in the embryonic elements, as an expression of inherited pathologic conditions of the brain of progenitors, or of alterations of the brain acquired in the course of life. The abnormal disposition, infirmity, or actual disease induced by any of these factors evinces, according to the biologic law of heredity, a strong inclination to become transmitted in some form or other to descendants.

The manner of transformation in the course of hereditary transmission and the special form of nervous or psychic infirmity are dependent upon individual as well as external and largely accidental conditions. Science has not yet succeeded in formulating a law.

In general, it may be said that when two tainted individuals beget children, or when, also to the bad constitution of one parent unfavorable injurious influences (drunkenness and weakening diseases) are added, the taint in descendants grows more decided; and with continued transmission the psychopathic degenerative factor induces progressive degeneration to the most severe form. Out of neuropathies, psychoses develop, at first benign in form, having the character of the psychoneuroses; then arise the still more degenerate forms of circular, periodic, moral, and impulsive insanity; until finally idiocy results. Then Nature obliterates the pathologic family, which loses physiologic power to propagate itself.

On the other hand, regeneration at a certain stage is still possible by crossing with the healthy blood of an intact family, or under the influence of favorable circumstances. The forms of disease then become progressively milder; and, if the crossing is continued, the degenerate seed may disappear completely.

A congenital disposition may also arise without any hereditary influence. Thus, anomalies in the form of the skull and in the development of the brain may result from a rachitic pelvis in the mother (Zuckerkandl); from degenerative development of the brain as a result of fetal brain disease (porencephaly) or injury; perhaps, too, from emotional disturbance in the mother during pregnancy; and finally as a result of the parents being too young or too old (Emminghaus).

The interesting question whether there is such a thing as a clinical form of hereditary insanity, which has been answered in the affirmative by Morel, must still remain open.

In my experience, the hereditary degenerative factor forms only one of the manifestations of degenerate insanity in general (*vide* "Special Pathology").

With reference to the foregoing question it is necessary to emphasize the difference that exists between simple hereditary predisposition (latent disposition) and hereditary taint (burden): *i.e.*, where the factor of heredity in the psycho-physical development and nature of the individual exists and exerts a definite and burdening influence. Insanity based merely upon an hereditary predisposition differs in no way from cases that are not hereditary, except that in the former insanity occurs at an earlier period of life,—its outbreak is induced by slight accessory causes, is more sudden, recovery is quicker, and the prognosis better.

In the cases representing transitional stages to hereditary degenerate insanity the forms of disease become more grave, more organic, and certain features of degeneration—like stupor, impulsive acts, and periodicity—make themselves manifest.

Neuropathic Constitution.

Next to hereditary predisposition the most important predisposing factor in the individual is that peculiar condition of the nervous system that has been called neuropathic, the essential element of which lies in the fact that the equilibrium of the functions is very delicately established, and under the influence of slight causes is lost; and, further, in the fact that reaction to irritation of any kind is extremely intense and extensive, quickly leading to exhaustion.

This condition of "irritable weakness" makes it possible for stimuli to exercise an influence which on individuals that are not neuropathic would exert no effect at all, or an effect of less intensity; and thus is explained the readiness with which disease results from the slightest injurious influence.

Such a neuropathic constitution is congenital or acquired. In the first case, as a rule, it arises upon an hereditary basis, and is the functional expression of beginning degeneration of the most highly organized nervous elements. It may, however, be congenital in the descendants of parents in nowise tainted, and it is then the result of weakening influences that affect the embryo at the time of conception (*e.g.*, severe diseases, syphilis, and mercurial cures in the father); or of injurious influences exercising their effect during fetal life (diseases, disturbances of nutrition, excesses, on the part of the mother, etc.). Not infrequently the neuropathic constitution is acquired

as a result of severe exhausting diseases like typhoid, frequent and difficult labors and the puerperal state, hemorrhages, sexual excesses, onanism, and as a result of mental and physical over-exertion in connection with emotional disturbances. Too, severe acute diseases in childhood, like the exanthemata and cerebral diseases, may induce it.

Education.

Next to his brain organization, man owes most to the nature and manner of his education as affecting the peculiarity of his mental character. Sometimes organization and education act together in the production of psychopathic disposition; in so far as parents transmit to their children, not only by way of heredity an unfortunate organic constitution, but also, through consequent abnormal passions, defects of morals, and force of bad example and defective education, their eccentricities and moral defects.

Thus may arise the conditions for hysteria, hypochondria, and inebriety.

If it be asked what peculiar defects of education are apt to give rise to the predisposition to insanity, we may answer:—

(a) Too strict treatment of an extremely impressionable and emotional child, who is sensitive and so much in need of loving care. If, in a case like this, harshness predominates, then not only is the development of proper feeling prevented from its incipiency, but, at the same time, a foundation is laid for painful relations with the world, ending, perhaps, in *tædium vitæ* and a retiring character.

(b) On the other hand, an education that is too solicitous, which can deny nothing, and excuses everything, and thus cultivates obstinacy, unbridled passions and emotions, defective self-control, and inability to practice self-denial.

A mother's darling seldom amounts to much. Social life demands self-control and submission to the majority, power of resistance to the storms of life, and resignation. Where these qualities are wanting, there is no escaping disappointments, bitterness, and pain. Sometimes the later rough school of life makes up for defects of education, and forms the character; but this cannot occur without great trouble, which threatens, in many instances, the mental equilibrium.

(c) Too early awakening and strain of the intellectual powers at the cost of the emotions of childish simplicity and bodily health. This cause makes itself doubly felt where brilliant and often one-sided capabilities, as they occur in neuropathic and hereditarily predisposed children, excite the pride of parents and guardians, and lead to overstrain of the mental powers of the precocious child. It is only rarely that such premature and brilliant children amount to much, and then only if they are treated like hot-house plants. In the best case they develop one-sidedly, and become "partial geniuses" with weak bodies. Not infrequently, however, especially at the time of puberty, their development is arrested, and they make no further advance.

In general, the education of children of the higher classes must be characterized as defective. All too early does the struggle for existence affect these children in the form of exorbitant demands in school, which can only be satisfied at the cost of sleep and physical development.

In this way a neuropathic constitution may be acquired, and thus the foundation laid for later insanity. No less dangerous is the too early introduction of children into the social circles of adults. This leads to early satiety, to anticipated sensual indulgences and excesses, which injure physical and mental health.

Accessory Causes.

1. Psychic Causes.

Without doubt emotions may give rise to insanity, just as they are occasional causes of hysteria, epilepsy, chorea, aphasia, and by shock may even cause fatal paralysis of the heart and respiration. On the other hand, occasionally the cure of mental disease, of paralysis of the will, and conditions of aphasia, may be similarly induced. The great influence exerted on the vasomotor and motor centers by affects at least makes clear the power of such psychic movements.

But from this point to insanity is a long step. The idea of the laity, especially of dramatists and novelists who represent insanity as arising out of powerful passions and affects without anything else, is at least one-sided. Nevertheless there are cases in which violent affects, for the most part fright, have immediately induced insanity (stupor, primary dementia, mania); but, as in analogous cases of epilepsy, there always exists in such cases a considerable predisposition (neuropathic, principally hereditary) or a temporarily increased excitability of the brain (menses, puerperal state). The shock-like psychic influence in such a case disturbs the vasomotor innervation, and consequently the circulation and nutrition of the brain.

As a rule, the psychosis does not immediately follow the etiologic influence, and there is often a longer or shorter period in which the individual affected seems to regain his psychic equilibrium; but later the patient begins to be ill, loses weight, and suffers with disturbances of digestion and menstruation, with anemia, sleeplessness, and tuberculosis. The intermediate factors between cause and effect are those disturbances of nutrition that finally reach the psychic organ.

The previous existence of a somatic or psychic disposition favors the outbreak, but the influence of the psychic element in undermining the constitution may induce insanity without such aid.

This is easier when the psychic cause acts in a chronic way: *e.g.*, in the form of household trouble.

Too, in cases where a single outbreak of emotional excitement leads to insanity after weeks or months, there is usually a coexistent predisposition; or the shock is so intense and sudden that the ideas accompanying the affect induce neuralgias or become fixed imperative ideas. Experience shows that it is almost exclusively depressive emotions (death, loss of fortune, loss of honor, etc.) that lead to insanity.

The causes vary with the sex and individuality. In women they are injury of honor (rape), or the slow, and therefore more injurious, influences of unhappy love, marriage, jealousy, or the sickness or death of children. In men unsuccessful efforts, loss of occupation, injured pride, and financial ruin are effectual.

Not infrequently physical maltreatment, and also railroad accidents, are causes of mental disease (traumatic neurosis).

Sometimes mechanical traumatic influences play an etiologic rôle, but, as a rule, it is the psychic shock associated with the physical injury that exercises the decisive influence.

The pathogenesis is psychic through the painful affect resulting from maltreatment, which is maintained by pain following the injury, by anxiety about the possible results, by the feeling of injured honor, or by the exciting influence of lawsuits, etc. (forms of melancholia, hypochondriac depression, hysteria, etc.). Or the origin is vasomotor, due to vascular spasm or vascular paralysis resulting from the fright. Under such circumstances we observe forms of stupor, primary dementia, melancholia attonita, and acute mania.

Cases of purely mental origin are such as occur after a stupor.

The transitory deliria, mainly accompanied by frightful hallucinations that occur in some instances where the eyes are merely closed, in patients who are shut in a dark room, and also in patients that have been operated upon for cataract and other eye diseases, are mainly due to the effect of fright.

In my experience in such cases we have to do with individuals that are imbecile, abnormally excitable, or those weakened by old age, alcohol, and other depressing influences.

Among psychic causes of insanity must also be reckoned imitation (contagion), like the well-known cases of hysteria and hypochondria due to mental contagion.

There is always in such cases a decided predisposition, whether it be hereditary or a family tendency, or like social conditions (hunger, religious and political excitement); or, as Nasse found, the strain of caring for insane patients has broken the physical and mental strength of excited relatives.

If predisposition is wanting, association with insane patients for scientific or humane purposes has scarcely any effect at all. It is a fact that those connected with asylums seldom become insane, and then it is usually under conditions that, aside from the peculiarity of occupation, would have had the same effect; but for those that are tainted the calling of the alienist or attendant is dangerous.

2. Physical Causes.

Cerebral Diseases.

Meningitis.—Insanity is the expression of disturbance of nutrition of the brain cortex which may go even to the extent of degeneration.

Owing to the anatomic and functional relationship of the blood-vessels of the pia mater and the cerebral cortex, it is evident that hyperemia and tissue-changes in the pia may induce disturbances of nutrition in the brain cortex, and thus bring about insanity.

Thus, acute leptomeningitis, when it takes a chronic form and exudates are not reabsorbed, may induce disturbances of nutrition and symptoms of irritation in the cortex (dementia and intercurrent mania). Tuberculous meningitis not infrequently runs a subacute course in adults, in the form of an almost afebrile psychosis. Too, pachymeningitis interna hemorrhagica may induce psychic disturbances (primary progressive dementia with general ataxia, paresis, and intercurrent maniacal states of excitement, epileptic and apoplectic attacks).

Focal Diseases of the Brain.—The anatomic changes lying at the foundation of mental diseases are diffuse, not focal.

Focal diseases of the brain, when they do not affect the cortex, may run their course without psychic disturbance; frequently enough, however, they are complicated with such disturbance when they are multiple (sclerosis, capillary apoplexy), or when by pressure, irritation, secondary degeneration of the vessels, edema, etc., they induce circulatory and nutritional disturbance in the cortex, or when they cause atrophy of a part of the brain with its overlying cortex. In such cases the disease-picture is, on the whole, that of progressive dementia with paralysis, with occasional states of excitement caused by irritation and disturbance of the circulation.

Among diseases of the brain falling in this category are to be mentioned: cerebral apoplexy[1]; atheroma of the cerebral arteries,

[1] Rochoux, "Recherches sur l'Encéphale." In these cases there may be isolated large apoplectic foci, or miliary multiple capillary hemorrhages. Clinically there is progressive dementia with focal paralyses. Intercurrent states of psychic excitement, delirium, hallucinations, fear, and epileptic attacks occur. Sometimes there is cure of the apoplectic focus with consecutive brain atrophy and stationary mental weakness.

with multiple encephalitic foci of softening[1]; multiple sclerosis[2]; tumors[3]; cysticerci and echinococci.[4]

Etiologically a very important group is made up of head injuries. In the pathogenesis of this "traumatic insanity" chronic meningitic and encephalitic processes play a very important rôle. They are sometimes the direct result of irritation which the trauma causes; sometimes they are due to inflammations that have spread from circumscribed injuries to the skull or brain (apoplectic foci, brain abscesses). Occasionally constantly repeated attacks of congestion of a brain whose vascular tone is damaged induce the changes.

The psychoses that occur under such circumstances have in the main a grave idiopathic character; are complicated often with motor, vasomotor, and sensory disturbances; and, for the most part, have an unfavorable prognosis.

They follow immediately upon the trauma or develop after weeks, months, or years.

In the first case, following upon the symptoms of concussion come symptoms of brain irritation (headache, dizziness, feelings of anxiety, hallucinations, narrow pupils, and grinding of the teeth), with motor (disturbances of co-ordination, circumscribed paralysis) and sensory disturbances (cutaneous and sensorial hyperesthesia). The latter soon pass away, but with the continuance of the motor disturbances and occasional outbursts of excitement (fear, hallucinations) a great reduction of the mental functions takes place.

In some cases there is recovery (Huguenin, Wille), but usually there is some mental weakness remaining, and it may even go to the extreme degree of progressive dementia with great irritability (chronic periencephalomeningitis).

When insanity does not immediately follow upon head injury, the relation between the two is shown by a longer or shorter stage of cerebral irritability as a result of diffuse cortical disturbance (periencephalitic processes, hardening of the ganglion-cells, increase of glia tissue, Durand-Fardel cell infiltration), induced by transformation of extravasations, cysts, irritation by splinters of bone, etc.; or the same thing arises from frequently repeated attacks of congestion to which the weakened brain is disposed by the trauma.

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[1] *Vide* "Dementia Senilis" ("Special Pathology").

[2] Here there is constantly and very early mental weakness with childish weeping. In its course, frequently intercurrent deep melancholia with *tædium vitæ*, and sometimes also delusions of persecution and great delirium; terminal dementia.

[3] Here there is progressive dementia with general paralysis and focal symptoms (paralysis, convulsions). Intercurrent maniacal states are possible. The tumor may also lead to the disease-picture of dementia paralytica (Gazette des Hôpitaux, 1857, page 123).

[4] Cysticerci usually found in the cortex; echinococci, in the ventricles. Symptoms of progressive dementia with intercurrent apoplectic and epileptic attacks occur.

The symptoms of this prodromal stage in the psychic sphere are intense irritability, change of character for the worse, as a result of which the outbreak of insanity is hastened; in cases in which dementia paralytica develops later the prodromal symptoms consist of signs of brain exhaustion (weakness of memory, mental apathy). With these psychic symptoms we observe very frequently headache, dizziness, complaint of inhibition of thought, optic and acoustic hyperesthesia, spontaneous congestion or congestion resulting from slight causes, and with an evident increase of all the symptoms of brain irritation.

These psychoses are forms of mental disease that closely resemble dementia paralytica; or angry manias with sudden explosions and violent congestions recurring periodically, with a termination in dementia with brutal irritability; or epileptic insanity (usually large scars and adhesion of the membranes to the skull).

A head injury, however, may also be effectual, not so much in actually causing insanity as in lowering the resistive power of the brain and thus inducing a predisposition for the accidental development of insanity. Clear understanding of how trauma acts to induce weakness is wanting; but without doubt it exerts its primary effect on vasomotor innervation and reduces the resistive power of the vasomotor nervous system. This acquired disposition due to traumatism usually expresses itself in a tendency to congestion, intolerance of alcohol and heat, and also frequently in a marked tendency to physical and mental exhaustion and great emotional irritability. In such cases, it is usually influences that reduce vasomotor innervation (affects, drunkenness, heatstroke) that induce the psychosis. This may appear in various forms (mania, delusions of persecution, and general paralysis).

The picture of an idiopathic psychosis is always in such cases more or less easily recognized, and, along with the psychic symptoms, congestive symptoms, complaints of headache, and dizziness are noted.

Following the cases of insanity due to head injury come those due to the extension of inflammation from the temporal bone (caries, otitis interna) to the meninges and brain. In these cases, too, we have to deal with severe idiopathic conditions usually ending in death (manias).

Insanity may also be due to caloric influences (insolation and great heat from furnaces), and the form of disease is usually acute delirium or progressive dementia with great irritability and intercurrent outbreaks of anxious excitement; or also dementia paralytica. The immediate causes are probably hyperemia induced by the heat, as a result of which inflammatory processes in the brain and meninges are induced (cloudy swelling as a forerunner of parenchymatous encephalitis—Arndt; pachymeningitis and leptomeningitis). The prodromal symptoms of insanity due to caloric influences are those of brain hyperemia (dull headache, pressure in the head, irritability, mental languor and dullness, sleeplessness).

Diseases of the Spinal Cord.

In the course of tabes psychic disturbances are not infrequently observed. Besides elementary psychic depression, and "dementia tabica" which sometimes accompanies tabes from its beginning (Westphal, Simon), as a cause of which Simon demonstrated the existence of sclerosis of the white substance, there are not infrequently psychoses that develop as the final phenomenon of tabes, and then are usually in the form of dementia (cerebral atrophy, pachymeningitis—Simon), dementia paralytica, delusions of persecution, and melancholia. The manner of origin is probably one depending upon the tabetic process and disturbances of vasomotor innervation, and in case of dementia paralytica the identity of the decisive cause (syphilis).

Affections of the Peripheral Nerves.

Analogous to cases of tetanus and epilepsy following peripheral nerve injury, psychoses may also develop as a result of the direct reflex irritation of the cerebral cortex, or through vasomotor reflex influence and consequent disturbances of the circulation.

In addition to the older cases reported by Jordens, Zeller, and Griesinger, Koppe has shown that, as a result of a traumatic neuralgia of the fifth and the occipital nerves, reflex psychoses may develop, and that without any injury of the brain. In some cases recovery was brought about by excision of the scar. Another very instructive case is that of Wendt, in which a gunshot injury of the left auriculotemporal nerve, with occasional recrudescence of pain in the course of this nerve, was followed by attacks of epileptoid delirium.

As a rule, a neuropsychopathic constitution is present and renders the vulnerable cerebral cortex obnoxious to peripheral irritation. Too, the weakening effect upon the brain in general, and especially upon the vasomotor innervation, of the trauma that induced the neuralgia is to be regarded as pathogenic in such a case.

In a few cases the factor of psychic shock, with the injury, must be given weight in the etiology.

The clinical demonstration of the traumatic-neuralgic relationship in such cases is found in the history of the origin; the aura-like return of the neuralgia before and during the psychic attack; the possibility, sometimes present, of inducing the attack by provoking the neuralgia, as by pressure; and finally the success of treatment by such procedures as excision of the scar, or local anesthesia. The outbreak of insanity follows shortly after the injury; the disease-picture is not

uniform, but most frequently is either epileptoid, hystero-epileptic, or hypochondriac-melancholic.

Operative Procedures.

Aside from the psychoses observed after operations on the eye, others after various operative procedures, especially castration, have been frequently observed. The pathogenesis is various. Besides neuropathic constitution and neuroses as predisposing conditions, where the neurosis may be independent or stand in relation with the disease that requires the operation, other important factors are the mental excitement which often precedes and accompanies operations; mechanical shock; loss of blood; the influence of chloroform; and the toxic influence of certain drugs, such as iodoform, during the after-treatment; and, in cases of castration, the climacteric thus induced (*vide* "Psychoses of the Climacteric").

The psychoses that occur after operations are usually early and transitory. Maniacal states are decidedly the most frequent (Gucci). The prognosis is dubious. Another group of cases is made up of states of delusional insanity, seemingly the expression of iodoform intoxication (Jll), or due to the effect of chloroform (Savage).

Those that are most familiar and important are the cases of insanity occurring in women after ovariotomy, which are to be regarded as psychoses of the artificially induced climacteric. Melancholic disease-pictures predominate here; sometimes acute manias are observed (Gaillard). The corresponding operation in men may induce melancholia, as is shown by cases reported by Gucci and Weiss.

Wunderlich describes under the term delirium traumaticum or nervosum a transitory insanity following painful operations or injuries, felons, etc. It occurs from one to three days after the operation or injury. The patient becomes talkative and excited; after sleepless or dream-disturbed nights the eyes become bright, the face flushed, the ideas confused. Restlessness increases; the patient no longer feels any pain, begins to act wildly, sings, cries, and tears off the bandages. At the same time the pulse is quiet and no fever is present. After a few days sleep becomes deeper and longer, and the patient awakes knowing nothing of what has taken place. Sometimes death occurs from exhaustion in from three to five days.

General Neuroses.

Insanity not infrequently accompanies or follows general neuroses.

CHOREA MINOR.—In this disease there are almost always elementary psychic disturbances, such as irritability, apathy, mental indifference, forgetfulness, and confusion; frequently also hallucinations of sight, and sometimes even well-marked mental diseases like mania, active melancholia, and demono-

mania of persecution, which probably have the significance of inanition psychoses due to exhaustion following upon the greatly increased muscular action and lack of sleep.

There are some reported cases which indicate that psychoses may occur rarely in Basedow's disease.

Dr. Hirschl, in a noteworthy work, has collected all the cases reported of Basedow's disease in literature since 1862, 43 in all, and has increased that number by 6 of his own cases.

As common causes of the two complicated diseases the author finds heredity and psychic trauma.

The anatomic substratum of the psychosis is probably cerebral hyperemia due to dilatation of the vessels following paralysis of the vascular center in the medulla.

After separating the cases in which the relation with Basedow's disease was highly questionable (alcoholic delirium, *folie du doute*, hysteropathic and febrile delirium, hallucinatory insanity, dementia paralytica), the remaining cases were mainly states of mania, much less frequently melancholia with pronounced feelings of anxiety. Maniacal conditions correspond with the degenerate forms, with predominance of an irritable state of feeling. The prognosis is unfavorable. In 49 cases of the psychoses in Basedow's disease there were only 6 recoveries, and 18 cases ended fatally.

As an elementary and almost typic mental disturbance accompanying Basedow's disease, Hirschl observed abnormal gaiety and irritability. In pronounced cases the psychic picture "lay midway between health and maniacal exaltation on a degenerate foundation."

Ball has also noted the frequency of mental disturbance in paralysis agitans.

Besides the well-known mental weakness usual in the course of this disease, which is probably a manifestation of premature senility, Ball found in the majority of his patients elementary psychic anomalies like irritation; and frequently also psychoses, in the main melancholia with hallucinations and impulses to suicide, usually occurring intermittently and simultaneously with exacerbations of the motor neurosis. Parent describes a case which gives the impression of a senile dementia with occasional attacks of hallucinatory excitement. In general in these cases premature senility seems to play the most important etiologic rôle.

Psychoses, partly transitory and partly lasting, in association with hysteria and hypochondria, are very frequent. Almost always in such cases hereditary taint is demonstrable, and the psychosis then forms the end of a progressive disease-process affecting the nerve-centers more and more widely (*vide* "Special Pathology").

EPILEPSY.—Seldom does an epileptic remain free from mental disturbance throughout his life. Besides ordinary elementary and frequent transitory disturbances of the mind, the mental powers frequently undergo a deep, lasting, and usually progressive deterioration

(according to Reynolds, 61 per cent.), in which at first the character and ethic sphere, and finally intelligence, suffer (mental degeneration). This deterioration may progress to deepest dementia.

The manner of origin of mental disturbance in epilepsy is not clear. The explanation must be sought in hereditary or acquired brain disturbances that lie at the basis of epilepsy, and which in their further progress affect the psychic organ itself.

Much less effectual are the general disturbances of the circulation due to epileptic attacks, as is shown by the fact that the vertiginous form of epilepsy is much more dangerous for the mind than the convulsive form.

Congenital epilepsy and that beginning before puberty not only interfere with the development of the brain, but usually in the course of life lead to dementia. The violence of attacks seems less dangerous to integrity of mental power than their frequent occurrence. Females are more endangered by it than males (*vide* "Special Pathology," "Epileptic Insanity").

Acute Constitutional Diseases.[1]

Acute diseases, especially those in which a high temperature is quickly reached, with a sudden critical fall, are not unimportant causes of disturbances of the mental functions. In such cases elementary disturbances of the mind in the form of somnolence, stupor (disturbance of consciousness), illusions (apperception), hallucinations (central), rapidity of ideation, disturbances of association, confusion, deliria (intellect), are common. This symptomatic or sympathetic excitement of the cerebral cortex either limits itself to such disturbances or progresses to general and complex involvement of the psychic organ—*delirium*. The disease-pictures classed under the head of delirium differ in general from those that we are accustomed to classify as insanity in general, by their transitory character, by their deep involvement of the sensorium, the incoherence and confusion of ideation, and the predominating involvement of the senses in the form of hallucinations. These states of delirium, owing to the irregular irritation of the organ of thought by inadequate stimuli, and the suppression of the higher faculties of attention and reflection, present the

[1] Compare the excellent monograph of Kräpelin, "Ueber den Einfluss acuter Krankheiten auf die Entstehung von Geisterkrankheiten," with exhaustive literature (Archiv für Psychiatrie, Bd. xi und xii), whose conclusions are summarized in the text.

characteristics of hallucinatory confusion, and, therefore, out of this condition systematized delusions, with lasting anomalies of feeling, or fixed delusions with total change of personality, are not easily developed. However, transition is easy, and the origin of chronic and independent states of insanity out of the delirium of acute diseases is not infrequent.

In acute diseases delirium occurs, for the most part, at two stages of their course: at the height of the disease-process and during the period of its subsidence. The delirium of the acme, or febrile delirium in its narrower sense, occurs especially in acute infectious diseases, and is apparently due to disturbances of nutrition and circulation, which are induced by the febrile process in the brain and the body at large, especially where there is very high temperature (favorable effect on the delirium of antipyretic measures). The most important disturbances of this kind, at the beginning of febrile processes, are increase of the heart's action, hyperemia of the cortex, increased oxidation of the albuminous tissue-elements with insufficient substitution; and, in the course of the disease, the venous hyperemia due to functional weakness and degeneration of the heart-muscle, thrombosis of capillaries, stasis, edema, and the accumulation of the waste-products of metabolism in the brain as a result of their insufficient removal. Besides, there is the direct toxic and ferment-like effect of the infectious material circulating in the blood, which, independently of the fever, may induce toxic delirium: *e.g.*, in the stage of incubation when no fever has occurred.

The delirium of the acme is usually of a muttering character; but it may also appear in the form of anxious excitement, with corresponding hallucinations and delusions of persecution, or as a furibund delirium.

The delirium that occurs in the stage of subsidence of a febrile disease (from collapse, inanition, asthenia, or exhaustion) depends upon anemia and grave disturbances of nutrition in the cortex. It occurs with especial frequency in diseases that have a critical fall of temperature, like pneumonia, and the acute exanthemata, where suddenly the heart-muscle, that has previously been stimulated by the fever, loses its energy, and the cortex, exhausted by overstimulation during the stage of fever, and which physiologically requires an abundant blood-supply, is suddenly deprived of the required amount of blood.

Other disease-processes that are accompanied by acute and profuse loss of the fluids of the body (cholera) are also often followed by such states of inanition-delirium.

Besides cardiac weakness and loss of fluid, according to Kräpelin, we must also consider the chemic influence and the tissue-changing effect of infectious material and waste-products of tissue-change on the brain, especially in typhoid and malarial diseases. Too, hereditary and other pre-existing dispositions, which are of small importance in febrile delirium, here play a part.

In contrast with febrile delirium, Kräpelin explains the development of more numerous symptoms, the deeper involvement of the personality, even to the extent of a detailed system of delusions, the longer duration, and less favorable prognosis, with the not infrequent termination in a chronic psychosis, by the more profound and lasting changes in the central organ. These cases of inanition-delirium are clinically expressed in acute desultory elementary disturbances (hallucinations, delirium with indifferent or anxious content, attacks of anxiety, etc.), or as protracted and more complicated states of melancholic, maniacal, or hallucinatory confusion; and thus they represent transitions to actual and independent psychoses.

The development of actual psychoses out of acute diseases—*i.e.*, those that develop during febrile or infectious processes—may follow upon the delirium of the acme, or arise during the stage of subsidence; or they may develop spontaneously in the later stages of convalescence.

The psychoses that develop at the acme probably stand in relation to destructive tissue-change, grave disturbances of the circulation (thrombosis, pigment embolism), capillary hemorrhages following upon acute degeneration of the vessel-walls, as well as to the parenchymatous irritative changes that may even go to the extent of inflammation.

The psychoses that arise in the period of subsidence are due to the slow and difficult re-establishment of the nutrition and circulation of the brain; the obstruction to the removal from the brain of waste-products; the anatomic changes induced by the febrile process and continued beyond its subsidence; and, finally, to disturbed nutrition of the brain resulting from tissue-changes and complications in the vegetative organs.

Finally, acute febrile diseases, owing to their weakening influence on the brain, may leave behind them a disposition to mental disease, by virtue of which emotional disturbances, mental strain, indulgence in alcohol, or other injurious influences may cause insanity.

Among the acute diseases, typhoid, pneumonia, and intermittent fever play especially important rôles.

Typhoid.—In the prodromal stages and with the initial fever a delirium occurs, probably of toxic origin, that disappears, for the most part, during

the course of the disease. These are cases of severe infection, with a mortality as high as 61.5 per cent. The delirium begins with frightful hallucinations of sight and hearing, and during its course there are forms of hallucinatory anxious melancholia with fear of death, reactive impulses to suicide and murder, delusions of persecution, and often delusions of sin.

The febrile delirium at the height of the disease is due to fever, infective poisons, disturbances of the circulation, parenchymatous degenerations, and consumption of the nerve-tissue, as well as to other complications. The fundamental picture is one of stupor extending to sopor, due to hyperemia, edema, increase of watery fluids (Buhl) in the cranium, and increase of intracranial pressure. Upon this basis there are developed illusional and hallucinatory states of confusion with flight of ideas, and not infrequently also with psychomotor symptoms of irritation (typhomania); so that the disease-picture resembles the manical type.

The prognosis of these cases of febrile delirium is not unfavorable. Frequently they are protracted as a result of complicating diseases of the vegetative organs, especially pneumonia, decubitus, pyemia, and venous stasis in the brain with exudation of white blood-corpuscles (Duke Carl Theodore).

In about one-third of the cases the mental disturbance lasts beyond the fever, and it may continue months or years. As a residuum of the delirium, some delusions remain, accompanied by hallucinations and an anxious, irritable state of feeling. The patients become mentally dull and confused (acute dementia) as a result of consumption of the nerve-tissue—acute brain atrophy (deposits of pigment in the cortex—Hoffmann; loss of fat—Buhl).

The acute psychic disturbances during convalescence from typhoid Kräpelin refers to anemia, faulty composition of the blood, and overloading of it with products of retrograde metabolism; the chronic cases, to fatty and pigmentary degeneration and acute brain atrophy.

There are four forms:—

1. Quiet delirium lasting from a few days to a week. The prognosis is favorable. Delusions of grandeur are remarkably frequent.

2. States of maniacal confusion with delusions of grandeur and frequently hallucinations, even to an intense degree of mania. Recovery takes place usually in the first month; one-half the cases recover within the first year. After this time they become incurable. Less frequent conditions are those of agitated melancholia with great confusion and visual and auditory hallucinations.

3. Quiet, even stuporous, melancholia with delusions: the most frequent form. Moroseness, irritability, and delusions of persecution and sin develop, and in 30 per cent. there are also hallucinations. There are great exhaustion, loss of flesh, and mental weakness. The cases last months. In 65 per cent. recovery takes place. Transitions to mania and delusional insanity, with final ending in mental weakness, are not infrequent.

4. Acute dementia. The patients become demented, stupid, weep childishly, and are greatly exhausted mentally and physically. The course of the disease is slow. In 66 per cent. it lasts more than a year; 50 per cent. of the cases are incurable.

VARIOLA.—In this disease, also, in the prodromal stage, there are sometimes developed conditions of excited and even furibund confusion, which may last into the stage of suppuration, or may even pass on into chronic mental

disturbance. These are due to toxic influence. The delirium at the height of the disease Kräpelin attributes to congestive hyperemia, infective processes, grave disturbances of tissue-metabolism, and violent pain due to the inflammatory process affecting the skin and mucous membranes. In the stage of subsidence of the fever, asthenic and hallucinatory delirious states of short duration occur, in connection with the rapid fall of temperature below normal and profuse serous exudation in the pustules. Chronic psychoses following variola are infrequent. Kräpelin found only eight cases in literature, which lasted from a few months to a year. They occurred in the beginning of the third week of the disease, and usually took the form of anxious melancholia. Acute maniacal delirious pictures were also observed.

SCARLET FEVER, MEASLES, and ERYSIPELAS about the head are also rarely causes of mental disturbance. In such cases the anomaly lasts from a few weeks to a few months. The prognosis is usually favorable.

INTERMITTENT FEVER.—Two-thirds of the cases of this kind reported in literature were due to influence of the malarial intoxication, and took the form of an intermittent insanity, lasting hours or days, occurring instead of the attacks of fever, with a quotidian, and less frequently a tertian or quartan, type, and usually with perfect intermission.

These attacks of the "psychosis typica" existed at the beginning instead of the intermittent febrile attacks (intermittens larvata), and not infrequently without any accompanying symptom of fever. The most frequent form of this malarial psychosis Kräpelin found to be agitated melancholic delusional states with violent fear, frightful hallucinations, and impulses to suicide and homicide—on the whole, very similar to the delirious states of excitement of epileptics. Sometimes tetanic and epileptiform convulsions accompanied the paroxysm, which usually ended after a few hours of sleep, from which the patient awoke with no memory, or, at least, a very imperfect one, of the attack. States of maniacal exaltation with confused delusions of grandeur, and quiet melancholic depression with vague feelings of fear and hallucinations of hearing, as well as states of apathetic confusion and pronounced stupor, are less frequent. Another way in which the psychosis develops (as a rule, a state of maniacal exaltation) is by gradual substitution for the attacks of fever.

Finally, chronic insanity may develop on the basis of malarial cachexia as an expression of anemia and melanemia (pigmentary embolism of the cortex—Griesinger), and continue months or years. In literature such cases are reported mainly as manifested in states of stupor and acute dementia; less frequently, in maniacal and melancholic delirious confusion with hallucinations. With sustaining treatment the prognosis is not unfavorable.

ACUTE ARTICULAR RHEUMATISM.—The older physicians (Sydenham and others) were acquainted with the fact that severe cerebral symptoms, even with a fatal ending, may complicate acute articular rheumatism. Whether this was to be explained by the height of the fever, by toxic influences, or by inflammatory, hyperemic, meningeal, or endocarditic complications, seemed, and still seems, questionable.

Kräpelin divides these cases of acute rheumatic cerebral affection into two groups. The first group presents severe cerebral symptoms, lasting hours or weeks, that are due to hyperemia of the nerve-centers, with even transudation, or meningitis arising from embolic pyemic processes. In 70 per

cent. of the cases death occurred. The second group is characterized by delirious states developed with a rapid rise of temperature to hyperpyrexia, which soon pass into collapse and usually end fatally (rheumatic apoplexy, typhoid rheumatism). The autopsies were principally negative; so that we are justified in thinking of a toxemic process due to a rheumatic ferment exerting a pyrogenous, pernicious influence. Besides, in the first or second week of the disease ordinary febrile delirium may develop: in 52 per cent. of the cases with collapse and death, with hyperemia of the meninges and brain. From the third to the sixth week, as results of the fever and severe complications (endocarditis, pericarditis, pneumonia), and not infrequently associated with a relapse of the rheumatic process, mental disturbances are observed which subside with the disappearance of the fever; but, when the organism has been greatly weakened, the mental trouble may be more protracted. Kräpelin observed, under such circumstances, hallucinatory delirium with states of anxiety lasting as long as three weeks; cases of agitated melancholic delirium of several months' duration, sometimes with convulsions, chorea, and attacks of vertigo; further, protracted hallucinatory confusion, with a predominating anxious coloring; and, finally, alternating maniacal and stuporous conditions. Asthenic psychoses with a protracted course are not of so very infrequent occurrence, especially in those that are already weak or exhausted by the disease, and the psychosis is then induced by slight accidental causes.

A group of cases that are especially frequent and that belong here consists of states of melancholic or maniacal excitement with great confusion, mental exhaustion, and hallucinations, with frequent transitions to stupor, 92 per cent. of which recover. In another group belong cases of melancholic depression with transition to hallucinatory delirium or stuporous states, frequently associated with severe cerebral motor disturbances. All such patients recovered after a few months.

The occasional alternation of the affection of the joints and the psychosis that has been observed, Kräpelin explains as accidental; and he calls attention to the fact that the disappearance of the joint affection is more apparent than real, for, with the development of the psychosis, the inflammatory pain may be no longer felt or expressed. On the other hand, the psychosis may be temporarily overcome during a relapse of the joint affection as a result of the influence of the fever, which increases the amount of blood going to the exhausted and anemic brain. Complicating chorea was observed in 19 per cent. of all asthenic psychoses.

Polyneuritis.—In this disease, which is largely due to infection, psychoses (hallucinatory confusion) have also been observed, especially at the height of the disease. However, psychoses are not frequent when the cases of polyneuritis in alcoholics are left out of account. Korsakow has reported sixteen non-alcoholic cases, and attributes them to the influence of a toxin. He calls this, in his opinion typic, psychosis, "Cerebropathia psychica toxæmica" (general confusion, with or without hallucinations, with amnesia for latest events).

Pneumonia.—In this disease, weakened constitutional states, especially those due to drink, are decidedly influential. Febrile delirium at the height of the disease occurs in severe cases, especially with pneumonia of the apex and a weakened constitution. It is due to cerebral congestion; very rarely to

meningitis. It begins from the fourth to the sixth day of the disease, lasting, for the most part, only a few days, and is very dangerous (35.4 per cent. mortality). In these cases muttering delirium, as well as attacks of delirious mania, are observed.

In patients predisposed or weakened by drink the delirium may outlast the period of fever (profound disturbance of cerebral nutrition, weakened action of the heart, insufficient decarbonization of the blood due to pulmonary hepatization).

Not infrequently other psychoses are developed in the form of anxious, confused excitement with delusions of persecution; or with delusions of grandeur and joyful feeling, multitudinous hallucinations, flight of ideas, and impulse to constant movement, lasting weeks or months, and finally ending favorably.

The delirium that occurs with the subsidence of fever is that of collapse due to cardiac weakness and the consequent venous stasis, and cerebral edema. This is especially likely to occur in those that, before the outbreak of the disease, were weak, particularly individuals reduced as a result of drink. It manifests itself in states of excitement with hallucinatory confusion, flight of ideas, sleeplessness, great prostration, and subnormal temperature. The hallucinations and delusions are, for the most part, frightful in character—of persecution, poison, and sin. However, delusions of grandeur do occur. The duration of these cases is usually only a few days, but they may be protracted weeks or months; finally, with rest and sufficient sleep, recovery takes place in 84 per cent. of the cases.

INFLUENZA.—The epidemics of the last few years have shown that this general disease is relatively very frequently followed by nervous and mental disturbances. These depend upon functional exhaustion and inanition of the central nervous system, and are probably to be explained as the result of severe disturbances of nutrition due to a toxin. Besides states of intense general neurasthenia, Kirn observed mainly states of asthenic delirium, in some instances reaching the intensity of hallucinatory confusion. These cases began from the fourth to the eighth day after the subsidence of fever, and usually in from three to six weeks recovery occurred. Infrequently they passed into chronic delusional insanity, and less frequently ended fatally. Exceptionally he observed also melancholia of exhaustion with great disturbance of sleep and great loss of weight. These cases usually recovered in from six to eight weeks. Infrequently (six times in fifty-four cases) the psychosis developing after influenza took the form of mania lævis.

The psychoses after influenza observed by Kräpelin were depressive states on a neurasthenic foundation, sometimes resembling melancholia, sometimes hallucinatory insanity, and also hallucinatory confusion dependent upon states of collapse and inanition.

CHOLERA.—Besides the occasional stuporous and comatose conditions, and states resembling acute delirium, occurring during the typhoid stage and the stage of reaction, Kräpelin has collected from literature 19 cases of mental disturbance occurring in the period of convalescence, which were due to intense disturbances of cerebral nutrition. There were transitory states of excitement with great confusion, melancholic conditions with delusions and hallucinations of several weeks' duration, and stuporous states. In these cases the prognosis is entirely favorable.

Chronic Constitutional Diseases.

ANEMIA.—The pathogenic foundation of a great number of mental diseases is anemia, when this is a lasting condition and more or less constitutional in nature. Just as the anemic individual is more susceptible to disease in general, so is he also to mental disease; his susceptibility to injurious influences is greater, especially to those operating through the vasomotor and emotional spheres. Anemia in these cases constitutes an important predisposition; and it intensifies the significance of any pre-existing predisposition when it is superadded. It may also form the anatomic substratum of the actual disease.

Chronic anemia gives rise to mental depression, irritability, and mental indifference, and incapacitates, even to the degree of stupor. In such cases mental exertion soon leads to exhaustion; venous hyperemia due to uncompensated valvular disease may have an analogous effect.

The psychoses that develop upon such a foundation are simple melancholia or mania, or, where there is a predisposition, forms of stuporous melancholia, primary dementia, furious mania, and even acute delirium.

The general idea conveyed by the term "anemia" is, as Schüle justly remarks, unsatisfactory, and the notion how, as a result of it, the disturbance of nutrition of the ganglion-cells of the cortex arises is very incomplete (changes in vasomotor innervation, the rapidity of the flow of blood, the blood-pressure in diffusion, fatty degeneration of the vascular walls and the cardiac muscles, especially in pernicious anemia).

The causes of anemia are various. Loss of blood, acute and chronic exhausting diseases, inanition, prolonged lactation, frequent childbearing, disturbing emotions, sleeplessness, severe diseases of the digestive organs, diseases peculiar to women, chlorosis, development at the time of puberty, sexual excesses, etc., are the most important causal elements of anemia. It should also be remembered that in tainted individuals, especially those of the female sex, constitutional anemia arising at the time of puberty and continuing in spite of all treatment is a very common manifestation, and it must be looked upon as a symptom of a deep neurotic affection trophic in nature.

Anemia that has arisen acutely as a result of loss of blood or fever, according to my experience, induces mental disturbances only in those that are otherwise weakened or predisposed. The mental trouble is then manifested in stupor, primary dementia, acute maniacal states, or more frequently melancholic conditions with intense anxiety and multitudinous hallucinations, which are almost exclusively confined to the visual sense. The intense effect of the acute loss of blood on those that are already weak is explained by the results of bleeding in insane patients, who quickly pass, as a result of bleeding, from maniacal excitement to stupor, or after a short period of quiet, present a

graver picture of the original mental disturbance. Even the recurrence of profuse menses during mental disease may have such an effect.

PULMONARY TUBERCULOSIS.—The etiologic significance of pulmonary tuberculosis in its relation to the origin of insanity, as shown by Hagen's statistic investigations, is much less than was formerly supposed. More frequently tuberculosis develops in patients already suffering with insanity.

The comfortable, careless feeling of these patients and their self-deception concerning the nature of their malady are well known.

Nevertheless, in some cases they become melancholic, and this is to be attributed to the lung disease which operates to consume and deteriorate the blood; and if the patient lives long enough, it leads to mental weakness, dependent upon the gradual brain atrophy and an edema of the brain that is not infrequently found.

Skae and Clouston find peculiar features in this form of melancholia (phthisic insanity). They emphasize the suspicious feeling, apathy, motiveless irritability, with occasional outbreaks of angry violence. During the final stages of pulmonary phthisis, inanition-delirium may occur, just as in those that are exhausted, dying, or starving, etc. It has a muttering character chiefly, and is usually made up of pleasant ideas and hallucinations, though those of frightful content with a corresponding reaction are not excluded.

SYPHILIS.—Syphilis may lead to insanity in various ways, both by a dyscrasia and by localizations in the brain in the form of simple inflammatory and specific changes. The importance of the latter makes it necessary to describe them particularly in the section on special pathology (*vide* "Cerebral Lues").

Here we have in mind only those psychoses that are induced by the dyscrasia as such, by disturbed nutrition of the brain resulting from syphilitic chlorosis. What has been said concerning the significance of constitutional anemia holds true for this special form. The syphilitic dyscrasia has a weakening, predisposing influence upon the brain, and it may, as such, or with additional help of other slight accessory injurious influences (emotions, trauma capitis, alcoholic excesses, etc.) lead to insanity. Thus, Jolly and Emminghaus saw cases of transitory angry mania in syphilitics where the attacks were brought on by slight accessory causes.

Chronic psychoses, especially melancholia with delusions of sin, and syphilophobia are more frequent; also severe brutal manias with sudden outbreak, with frequently a rapid termination in dementia.

Chronic Local Diseases.

Impressions from the most distant organs are constantly carried to the brain by the sympathetic nerves, and the quality of these impressions has a very peculiar influence upon the state of feeling. In this it is worthy of note how varied the influence of the different organs is (the well-known euphoria of the consumptive and tabetic

in contrast with the depression and hypochondriac melancholic states associated with genital and intestinal diseases). Aside from this influence upon the feelings as the foundation of mental activity and sensibility, diseases of the vegetative organs may act similarly by inducing concrete sensations through reflex transference of excitation in the vegetative nerve-centers, and thus disturb the circulation in the brain. Besides this nervous mechanism, this effect may also be induced mechanically (heart disease), and finally diseases of the organs as a result of disturbance in the process of blood-formation may, as a result of inhibition or increased secretions, change the blood, the nourisher of the brain, chemically.

Gastro-intestinal Diseases.—It is certain that acute, and even more frequently chronic, gastric catarrh not only influence the state of feeling, but also often induce psychoses that usually take on the character of melancholia with hypochondriac coloring. But in such cases more exact diagnosis and examination of pathogenesis are required before the assumption of causation in indefinite pathologic conditions, such as hemorrhoids, portal obstruction, enlargement of the liver, etc., or accidental findings, such as abnormal position of the intestines, which were formerly (Schröder Van der Kolk), and still recently have been, regarded of etiologic significance, is justifiable.

In such cases the pathogenesis is not perfectly clear. Schüle ("Handbook," page 275) calls attention to the direct neurotic relation in which the vertebral vascular area (emotional sphere?) of the brain stands to the abdominal viscera through the inferior cervical ganglia with the splanchnic nerves, as well as the nerves arising directly from the liver. Besides, there is the venous and probably vaso-paralytic hyperemia of the digestive organs that exerts an injurious influence by causing anemia and directly reducing the nutrition of the brain, and indirectly the injury of the brain due to disturbed absorption in the catarrhal digestive tract affected with venous hyperemia. The obstipation always present in such cases increases still more the intensity of the catarrh, and thus helps to interfere with the circulation. Too, we should think of the possibility that the blood becomes toxic as a result of acetone and hydrosulphuric acid absorbed from the intestines. In many cases of this nature, however, no gastric catarrh is present, but there is a neurasthenia gastrica (vagus neurosis), the precursor or symptom of a universal neurasthenia, which apparently induces the psychosis in a direct neurotic way.

In literature there are cases in which irritation of the intestines due to worms induced reflex psychoses that were cured by the use of anthelmintics. In most cases roundworms and sometimes tapeworms were recognized as the cause. The former were thought to induce acute maniacal states of excitement. In cases of tapeworm we should rather think of the disturbance of nutrition than of sympathetic reflex irritation as a cause. Oxyuris may lead indirectly to insanity, in that it induces onanism, and this leads to mental disease. On the whole, insanity due to worms is an infrequent manifestation, and, when it does occur, it is most frequent in children, and then in those with neuropathic constitution.

HEART DISEASE.—Aside from ulcerative endocarditis, which occasionally leads to cerebral embolism and apoplectic dementia, we have here to consider valvular lesions and compensatory hypertrophy of the cardiac muscles. These conditions may affect the mental sphere secondarily, as a result of active fluxions and defective compensation through venous hyperemia of the brain (anxiety), lungs, and vegetative organs (catarrh, anemia). On the other hand, there is a possibility (Karrer, Guislain) that cardiac lesions (hypertrophy) may arise secondarily as a result of chronic states of anxious excitement, since these states of mind induce a continued increase of cardiac activity; likewise, fatty degeneration and atrophy of the heart may develop in the course of psychoses and lead to marasmus. The etiologic significance of heart diseases in their relation to the origin of insanity has been largely overestimated.

Karrer found, in autopsies of the insane at Erlangen, that 26 per cent. were afflicted with cardiac anomalies, and the sane examined postmortem in the pathologic institute presented but 25 per cent.: a very small difference.

Mildner and others found that, where cardiac defects are influential, hypertrophy of the left ventricle and insufficiency of the aortic valves induce mainly states of excitement of a maniacal nature, while hypertrophy of the right ventricle induces melancholia; at the same time, Mildner's cases of mania seem to be largely cases of agitated melancholia. At the conclusion of an article which sheds much light upon this difficult and complicated question, Witkowski concludes that, with the exception of insufficiency of the aortic valves, heart disease in the insane is associated with peculiar unrest and instability, feeling of pressure, expressions of which are largely impulsive in character and not infrequently become intensified to excessive violence toward self and others.

DISEASES OF THE KIDNEYS.—From his own and the experience of others Hagen recites numerous examples of insanity (not merely coma and delirium) in the course of chronic nephritis. In most cases the mental disturbance was manifested in melancholic states with delusions of persecution and poisoning. In one case there was recovery. In the others death occurred as a result of the fundamental disease. Four other cases of chronic degeneration of the kidney with mental disturbance were reported, but in these cases the etiology was not clear, and they were complicated by the climacteric, pneumonia, alcoholism, and meningeal hemorrhage.

Hagen looks for the pathogenic connection between diseases of the kidneys and insanity in acute or chronic uremia. A recent work by Auerbach supports Hagen's observations in showing that mental disturbance (usually melancholic) associated with disease of the kidneys is referable to the retention of waste-products (uremia), and disappears with the removal of the cause.

DISEASES OF THE FEMALE SEXUAL ORGANS.—The influence of this class of diseases should not be underestimated. Changes in the texture and position of the uterus play here the principal rôle, when they have induced chronic inflammatory and irritative tissue-changes (flexions, versions, descent, and prolapsus).

In none of these cases do emotional and especially nervous anomalies fail to occur. Next in importance in an etiologic sense come the neuralgic, hyperesthetic affections of the vagina (vaginismus) and then chronic catarrh, hypertrophy of the cervix with erosions, fistulas, and anomalies of development.

It is only very seldom that malignant and other new growths lead to mental disturbance, at most only indirectly to melancholia of psychic origin, or in the state of marasmus to delirium of inanition.

Insanity due to uterine disease has no feature that particularly distinguishes it. The notion that it must invariably be accompanied by erotic or hysteric symptoms is erroneous. This fact is to be explained by the varying nature of the pathogenesis.

Sexual disease, in that it may cause profuse menses, leucorrhea, etc., induces in a great number of cases only a general weakening of the constitution, which then constitutes a predisposition to neuroses and psychoses. In other cases such a predisposition precedes the genital affection, and the latter intensifies the former, or constitutes, under such circumstances, the accessory cause of the disease.

Its influence may be effectual:—

(a) Psychically, in that it induces sterility, with its depressing consequences.

(b) Directly, through the nervous system, either by irradiation or reflex influence of uterine irritation directly affecting the psychic organ, or indirectly through vasomotor influence; or finally through causing neurasthenia sexualis. In the first instance it usually takes the form of paranoia with erotic, expansive, or persecutory primordial delusions; sometimes nymphomania. Too, the cases of insanity due to vaginismus and those occurring after defloration, have a similar origin (demonomania, erotic hallucinatory insanity —Schüle). In cases that have the second manner of origin the pictures are usually those of acute melancholia or mania, with profound disturbances of consciousness, and with erotic or equivalent religious or demonomaniac deliria.

The psychoses arising on a neurasthenic basis take the form of paranoia with delusions of physical persecution, dysphrenia neuralgica, or chronic melancholic *folie raisonnante.* A neuropathic constitution as a necessary condition, where the origin is neurotic in nature, seems to me to be more than probable.

(c) Humoral, by inducing anemia. In these cases insanity takes the form of melancholia almost without exception, and, as Schüle emphasizes, not infrequently with delusions of sin and demonomania.

In connection with sexual diseases it is necessary here to refer to menstruation and its anomalies as causes of insanity.

Here we are also able to recognize a mental, a humoral, and a neurotic manner of origin. The failure of the menstrual process may act psychically in that it induces a fear of incurable disease or pregnancy (Mayer).

A humoral manner of origin is present where profuse menses lead to anemia, and thus dispose the individual to disease, intensify a predisposition that is already present, or act as an accessory cause.

The cases of neurotic origin are most important. In order to understand them it is necessary to remember the fact that physiologically the menstrual process throws the central nervous system into a state of intensified excitability and lessened resistive power to irritation. If an individual be neuropathic, tainted, and bordering upon instability, then the normal process of menstruation may be sufficient in itself to induce disturbance of the central nervous organs, which, depending upon the severity of the taint, expresses

itself in all degrees, from slight migraine to the severest forms of psychopathic disturbance. There are cases in which, with the regular recurrence of the menstrual period, mental disturbance occurs, and then an actual periodic insanity results (*vide* "Special Pathology"). That it is not the loss of menstrual blood, but a complicated nervous process in the ovarian nerves induced by ovulation that is determinant is shown by certain cases in which the paroxysms at the time of the menstrual period occur in the absence of any menstrual flow. The neurotic intermediate link is probably to be found in vasomotor disturbances of the brain reflected from the ovarian nerves.

In some few cases insanity, chiefly acute mania, has been observed to follow upon a sudden suppression of the menstrual flow by fright, or taking cold; or the suppression of menses was regarded as the cause of insanity. In such cases it might also be assumed that a collateral, vicarious fluxion to the brain constituted the intermediate link. As a rule, however, insanity and suppression of the menses are co-effects of the same cause, and have a vasomotor origin. Too, chronic amenorrhea, so often regarded as a cause, is at least somatically not so, but it is rather an accompanying symptom of insanity, and the common cause of both conditions is defect of development, disease of the genitals, or some disturbance of general nutrition.

Diseases of the Male Sexual Organs.—They play rather an unimportant etiologic rôle, and, as a rule, they are symptoms of a neuropathic state, congenital, or acquired as a result of sexual excesses, especially onanism.

This is true of spermatorrhea and impotence. In such cases of actual mental disturbance (melancholia, hypochondriac melancholia) there is probably a marked congenital or acquired disposition.

Inability to perform coitus on the part of individuals sexually weak who suspect their sexual power as a result of failure in their first attempt at coitus, and which, owing to the shame of the first failure, acts as an inhibitory imperative idea to prevent success in subsequent attempts, is in itself a pathologic phenomenon.

Here should be mentioned the hypochondriac melancholia with delusions of being syphilitic that sometimes occurs in neuropathic men weakened by sexual excesses, as a result of innocent excoriations, balanitis, gonorrhea, etc.

Sexual Excesses.

The significance of abuse of the sexual organs in the origin of neuropsychoses and psychoses is by no means small, and when the important relations in which the sexual nervous system stands to the nervous system in general, including those portions of it upon which the activity of the mind depends, are considered, this is at once comprehended. Disturbances of the sexual functions, like those of digestion, exert a powerful influence upon the emotional state, which in these cases is usually depressed or markedly hypochondriac.

Sexual excesses may create a predisposition to mental diseases, intensify a predisposition already present, or act as an accessory cause. The intermediate factor in the pathogenesis of nervous and mental diseases is neurasthenia induced by *abusus veneris*.

The conditions are most unfavorable when this acquired predisposition is added to one that is original. Numerous tainted individuals, however, are found in this condition, in so far as, with them, the sexual impulse arises abnormally early and with abnormal intensity, and very frequently, besides, finds some perverse manner of satisfaction. In such cases sexual excess is not so much a cause as a symptom, or at least a result of an abnormal condition, just as in those cases where an existing mental disease (mania, dementia paralytica, senile dementia) leads to sexual abuse.

This clinical fact must be taken into consideration in determining the etiology of a given case. Cases of insanity due to sexual abuse develop out of a neurasthenic condition, and manifest neurasthenic symptoms.

Mental disease due to sexual excess arises more readily when the person is very young or well advanced toward old age. Moreover, the degree of any taint is of decisive significance. At the same time, much depends upon the manner of excessive sexual indulgence.

(a) Excesses in natural sexual indulgence have a much less fatal effect than when they are unnatural. Their influence is directly exhausting, predominatingly cerebral. Women endure sexual abuse better than men, probably because, with them, the nervous system is less intensely excited in the sexual act.

Severe cerebrasthenia, senium præcox, dementia paralytica, and severe melancholia with hypochondriac coloring may develop as a result of the exhausting influence of excessive coitus. As a rule, however, there are other accessory causes operative at the same time. *Coitus interruptus* and *reservatus* are not without danger to women. They lead at least to sexual neurasthenia, with all its possible dangers for mental integrity.

(b) Much more injurious and of greater ethic significance are the unnatural sexual excesses mainly committed in the form of onanism. The reason for this lies probably in the fact that this habit is often associated with a neuropathic constitution, is practiced excessively often at a very early age, and constitutes an inadequate, unphysiologic excitation of the nervous system. This is especially true of so-called psychic onanism, in which ejaculation is induced solely by means of exciting the imagination (ideas of lascivious situations).

The effect of onanism is the induction of a genital neurosis (pollutions) which extends to the lumbar cord and leads to general neurasthenia.

On the basis of this predisposition psychoses develop later as a result of various accessory causes. According to my experience thus

far, which is by no means small, there is, besides, almost always an original neuropathic constitution; and, in cases where this does not exist, onanistic excesses scarcely lead to the development of conditions beyond the limits of an asthenic neuropsychosis.

That this vice occurs in the female sex and exerts an injurious influence is the general experience of gynecologists, neurologists, and alienists. The disease-pictures which present themselves under such circumstances do not seem different from those that occur in men.

On the basis of irritable weakness of the central nervous system (neurasthenia) due to onanism, the pathogenesis of the onanistic psychoses is varied.

(a) It may be psychic as a result of intermediate psychic causes. These are spontaneous feelings of remorse, shame, and fear of the results of the vice, in connection with the painful consciousness of being unable to overcome the habit by force of will; or these feelings may arise from the reading of certain popular books which represent the consequences of self-abuse in an exaggerated way. Besides, in those contemplating marriage, the actual relatively organic or psychic impotence may be the psychic cause.

In such cases we observe melancholia with intense (hypochondriac) nosophobic features expressed in a fear of tabes, consumption, or insanity, in accordance with the predominating symptoms of neurasthenia.

(b) The intermediate factor may be somatic, as a result of the effect of weakening influences such as insufficient nourishment, mental or physical overexertion, etc. The form of the disease-picture in such cases seems to be essentially conditioned by the defective constitutional element.

If the latter is mild in degree, stuporous or acute hallucinatory insanity arises as a pure exhaustion psychoneurosis. Upon a degenerate foundation (perhaps also without such when excessive onanism has been practiced from a very early age) states of primary progressive dementia develop. At the beginning and episodically there may be hallucinatory delirious states: raptus, primordial deliria, catatonic symptoms, and states of maniacal excitement with impulsive acts. Early in this condition of degenerate moral imbecility there is manifested loss of ethic and esthetic feeling (uncleanliness, impulses for disgusting things), absolute lack of emotion and will, with termination in the deepest dementia.

Certain states of paranoia and insanity with imperative ideas are to be mentioned as other decidedly degenerate disease-pictures.

Symptoms that belong more or less to all sexual psychoses clinically are those of neurasthenia; and hallucinations of smell of an unpleasant character (feces, odor of corpses, etc.) are seldom wanting. Not infrequently in these cases there are also epileptoid and catatonic symptoms.

Want of Sexual Satisfaction.

This is frequently regarded as a cause of neuroses and psychoses, but certainly it is never effectual except upon the basis of a neuropathic taint and an abnormally intense sexual impulse. Both of

these conditions are frequently found united in tainted individuals. A man is in more danger than a woman, since naturally in him the sexual impulse is more intense. When in the case of a woman sexual abstinence is given as a cause, we should carefully ascertain whether it is not rather the lack of fulfillment of her destiny as wife and mother, and thus of her ethic and social needs.

When sexual excitement is not overcome by temporary satisfaction, it results in hyperexcitation of the genital sphere (erections, hyperemia) and the whole nervous system.

Under such circumstances abstinence may induce such intense excitement as to lead to satyriasis, nymphomania, or at least hallucinatory delirium.[1]

In other respects the results of abstinence in individuals that are tainted are essentially the same as those following onanism.

A general neurasthenia is developed, and upon this foundation states of hypochondria, melancholia, paranoia, and insanity of imperative ideas develop.

Pregnancy, Confinement, Puerperal State, and Lactation.

Directly suggested by the weakening influences of sexual excesses, especially in men, are the exhausting effects of pregnancy and the puerperal state in women. At any rate, they have an equivalent significance with those indulgences which are so dangerous to men, for, among every 100 insane women admitted to asylums, these conditions as predisposing and accessory causes are operative in 17.8 per cent.

Here, as in all cases where physiologic phases are of etiologic influence in the production of mental disease, predisposition is of great importance.

Fürstner found hereditary predisposition in 61.7 per cent. of his cases of this nature, but Ripping found only 44.2 per cent. This investigator, on the other hand, found that an acquired disposition was an important factor, especially the weakening antihygienic influence of factory life, to which the majority of his patients were subject.

Other important predisposing factors besides hereditary predisposition are chlorosis, anemia, frequent and difficult births, long-continued lactation, severe diseases, profuse menses, and anything that weakens the constitution. Puerperal insanity is most frequent (9.2

[1] Compare the case related by Marc-Ideler, ii, page 137. Zola seems, in "Abbé Mouret," to have had this case in mind.

per cent. of all admitted), next comes that of the period of lactation (5.6 per cent.), and finally the insanity of pregnancy (3.1 per cent.).

(a) The *insanity of pregnancy* occurs usually in the last three months of gravidity. Ripping lays great etiologic stress on the changes in the circulation of the brain (anemia) due to the growth of the uterus, the addition of the placental circulation, as well as on chemic changes in the blood consequent upon gravidity.

The predominance of insanity as an accompaniment of pregnancy in the unmarried is explained by the unfavorable conditions of life that usually affect such persons, as well as by the anxiety about the future that naturally arises in such cases. The form of disease which the insanity of pregnancy takes is usually that of melancholia, seldom mania.[1] The rare cases of insanity that develop during the early months of pregnancy are really of short duration and favorable prognosis. The insanity of the later months does not end with parturition, and sometimes passes on into mania. The average duration of the disturbance is nine months. Relapses are frequent in subsequent pregnancies.

(b) Mental disturbances that occur during *labor* are transitory. They are accompanied by great disturbance of consciousness. Most frequently in such cases states of pathologic affect are observed, especially in the case of unmarried patients, due to the helpless position, shame at the loss of honor, fright at the signs of approaching labor, and anxiety about the future. Besides, there are states of furious excitement induced by labor-pains, with delirium and consequent exhaustion, as well as cases of transitory mania, hysteric and epileptic delirium, and eclampsia with delirium.

(c) Puerperal Insanity.—Its pathogenesis is dark. Etiology indicates predisposing causes which depend, in part, upon hereditary and neuropathic constitution; in part, on chlorosis, anemia, anomalies of the uterus, the weakening influence of preceding severe physical disease, loss of blood, protracted lactation, frequent births; in part, on the depressing influence of fear of death; in the case of the unmarried patients, also on shame and anxiety about the future.

Emotional states, mastitis, and other febrile somatic diseases may be called accessory causes. The cessation of the lochia and the flow of milk, which the laity blame so often, are symptoms, not causes, of the disease.

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[1] Schmidt found 31.3 per cent. mania, 52.9 per cent. melancholia, 10 per cent. paranoia, 5.8 per cent. dementia paralytica. Among 5 cases of the author's, 4 were melancholia, 1 dementia paralytica.

In the cases of insanity that occur during the earlier weeks the causes are mainly loss of blood, bad nutrition and diet, emotions, the beginning of lactation, mastitis, and inflammation of the uterus and its appendages; in those cases beginning from the fourth to the sixth week, the causes are disturbances brought about by the recurrence of the menses, especially menorrhagia.

The investigations of Ripping and Schmidt show the great influence of disturbances of nutrition (loss of weight) during the puerperal state, for, from the time of admission to the discharge of certain patients, they showed a gain of 29 kilograms in weight, and the insanity had gradually disappeared with the increase in weight.

Most frequently puerperal insanity begins at any time from the fifth to the tenth day of the puerperal state. It assumes no specific form. We are not justified in calling it puerperal mania; nevertheless, mania is the most frequent form in which puerperal insanity runs its course.[1]

During the first two weeks of the puerperal state we meet cases of transitory mania, puerperal fever with delirium, puerperal fever with the delirium of inanition, and puerperal psychoses (for the most part, mania or confusional insanity, less frequently melancholia, and sometimes also primary curable dementia). The proportion of mania to melancholia in these cases is about 3 to 1.

The mental disturbances that occur in the later weeks of the puerperal state are manias or melancholias.

Puerperal Mania.—The prodromal symptoms are sometimes those of melancholic depression, which, however, is but slightly marked and limited to emotional depression and a tendency to weep. In the majority of cases the symptoms are those of maniacal exaltation (restlessness, activity, constant activity of thought, talkativeness, sleeplessness).

The brevity of the prodromal stage, as well as the mildness of the symptoms in comparison with analogous cases of non-puerperal insanity, is remarkable.

After this prodromal stage has lasted a day or more, the acme of intense mania is quickly reached, with a continuous remitting course.

Errors of the senses play a great part in the delirium of puerperal mania. As a rule, they are the first in the series of symptoms, and remain so prominently in the foreground that we may justly speak of such cases as hallucinatory insanity (Fürstner).

The duration of the disease is from six to eight months (according to Schmidt, even 10.3 months), but there are abortive cases. The prognosis is

[1] Schmidt found 48.7 per cent. mania, 38.9 per cent. melancholia, 5.5 per cent. paranoia, 1.4 per cent. circular insanity. Of the author's cases, 17 were mania, 4 melancholia, 10 hallucinatory insanity, 1 paranoia, 6 acute dementia.

quite favorable. If the disease ends in recovery, in the majority of cases the patient passes through a stage of stupor which seems to be wanting only in mild cases (abortive). Memory for the events of this stage of severe mental exhaustion is very incomplete. Out of this stage the patient comes to herself either suddenly or gradually.

Puerperal mania has no specific symptom. That there is a predominating erotic coloring of the delirium is incorrect. Distinguishing it from non-puerperal mania are the shortness of the prodromal stage and the mildness of the symptoms, in this period, so that the disease, as it were, breaks out primarily and quickly reaches its acme; also the primary occurrence of errors of the senses and preponderance of them in the disease-picture (Fürstner). In general, these cases present severe forms of mania with great disturbance of consciousness. The postmaniacal stuporous stage of exhaustion, which Fürstner insists upon as diagnostic, and which is almost never wanting, is explained by the long duration and intensity of the disease.

Puerperal melancholia, which is less frequent, is of less favorable prognosis, and it lasts longer than mania before recovery; on an average, about nine months. Deep disturbance of consciousness and the demented coloring of the disease-picture in such cases are also dependent upon exhaustion, and are noteworthy. Schmidt emphasizes the morose, distracted, dreamy, forgetful, and senseless condition of such patients, as well as the frequent hallucinations and intercurrent attacks of anxiety.

Puerperal insanity may also occur after abortion when there has been great loss of blood. It is distinguished, like all insanities induced by acute nutritive disturbances of the brain, by multitudinous errors of the senses, especially those of sight. In these cases, too, convulsions are not infrequent. The prognosis is favorable. The average duration is placed by Ripping at five months.

(d) Insanity of Lactation.—The insanity of nursing women is probably always to be referred to anemia. Difficult confinement and the general and local diseases of the puerperal state have a predisposing influence. Nursing too long and too frequently in proportion to the general strength acts as the exciting cause. Insanity seldom occurs before the third month. The predominating form of disease is mania, less frequently melancholia.[1]

The prognosis is not unfavorable, but it is less favorable than that of puerperal insanity. The average duration of the disease is about eight months in asylum practice.

The practical importance of this etiologic group of insanities justifies some reference here to treatment. First of all, on the admission of the patient a careful physical examination should be made, and the thermometer should be used in order to be sure that no puerperal process or fever is overlooked.

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[1] Schmidt found 42 per cent. mania, 40 per cent. melancholia, 6.7 per cent. acute dementia, 3.4 per cent. dementia paralytica. The author found, in 29 cases, mania 19 times, melancholia 6 times, delusional insanity 3 times, and delirium acutum once.

The evident anemic basis of insanity occurring under such circumstances demands imperatively rest in bed and good nourishment. Refusal of food must not be indulged too long; in such a case clysters of prepared foods should be resorted to early. The medical indications are tonics, especially iron in the form of the peptonized albuminate and dialyzed, extracti secali cornutum, nux vomica, quinine in Malaga wine, with wine and beer. Sleeplessness can hardly ever be overcome by morphine; the extract of opium with quinine acts better. Alcoholics, especially beer, have the best effect. Occasionally chloral hydrate or paraldehyde, wet packing, and subcutaneous injections of camphor where there is not too marked a degree of anemia with fluxion to the brain,—*i.e.*, with excited action of the heart,—and lukewarm baths may be tried. Care should be taken to watch the condition of the genital organs in their process of retrograde change. At their recurrence the menses are profuse and have a weakening effect, causing a relapse. In such cases it is necessary to prevent the loss of unnecessary blood by the usual employment of ergot and hydrastis.

Insanity Due to Intoxication.

Alcohol.

Of the substances falling under this head that exert a deleterious influence upon the central nervous system, alcohol plays the most important rôle, owing to common overindulgence in it.

Indulgence in spirits has become a veritable curse to entire nations, for it not only impoverishes the individual and the race, but it seriously interferes with the moral, intellectual, and physical welfare of its victims.

The inclination to indulgence in alcohol is increased by habit, and inheritance tends to continue an indulgence that has become habitual, partly directly, and partly indirectly, since the abuse of alcohol by descendants whose constitution has become weakened leads to instinctive use of the intoxicant (Bär). The impulse to indulge in alcohol, thus implanted, often remains latent until, as a result of some severe acute or chronic disease, emotional disturbance, or the like, the asthenic nervous system has become weakened.[1]

Besides the innumerable accidents, crimes, suicides, and grave nervous diseases that arise either directly or by way of inheritance, over-indulgence in alcohol is one of the most important causes of insanity (chronic alcoholism and the psychoses developed upon this foundation; epilepsy and dementia paralytica).

The number of cases of insanity due to drink varies between one-ninth and one-third of the admissions to asylums, in accordance with class, nationality, climate, etc. In these figures we do not reckon the physically and morally degenerate—habitual drunkards who wander about in society with detriment to the family, public morality, and safety.

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[1] In a similar manner predisposed individuals come to indulge in morphine, chloral, and opium. It is remarkable how frequently, and in spite of the neurasthenic condition, unusually large doses of such drugs are borne.

The ways in which alcohol exerts an injurious influence on the nervous system are varied. Of first importance is the direct, partly by means of chemic irritation which changes the tissues, and partly vasomotor; for alcohol exerts a paralyzing effect upon the brain. Dilatation of the smallest vessels is induced and atheromatous degeneration of those somewhat larger, as a result of which a favorable soil for the development of apoplexy is created. Its influence to induce vascular paralysis is recognized in the enlargement of vessels (lowered tone), lymph-stasis, and emigration of the white blood-corpuscles, as a result of which acute clouding and thickening of arachnoid and pia, as well as increase in the growth of Pacchionian bodies, result. Pachymeningitis hæmorrhagica also is not infrequent.

The exciting influence upon the heart at first induces fluxions, which are further increased by hypertrophy of the cardiac muscle.

In the later stages the cardiac muscle undergoes fatty degeneration, and disturbances of circulation are thus induced, as well as by vasomotor paresis and atheromatous degeneration.

The nutrition of the psychic organ suffers indirectly through changes in the composition of the blood (hydremia, diminution of fibrin), profound disturbance of general nutrition, tissue-changes due to fatty degeneration of organs (liver), chronic gastric catarrh with fatty degeneration of the gastric glands, cirrhosis of the liver, and chronic interstitial parenchymatous nephritis.

But the vice of drunkenness also exercises a mental effect through the social conflicts into which the drunkard falls and the ruin of his financial standing, his family happiness, and his honor as a citizen.

Finally, it should be considered that drinking is frequently a means of overcoming remorse, care, anxiety, or a bad conscience, and under such circumstances two powerful etiologic factors work together to produce insanity. The detrimental effect of amyl alcohol as compared with the less injurious influence of ethyl alcohol was alluded to on page 140. The widespread use of absinthe in France and Switzerland exerts an especially pernicious influence.

Not infrequently the injurious influence of alcoholic excesses is added to others of a physical nature,—hunger, exposure, want,—and others of a mental nature,—conflicts and dangers,—as they affect individuals reduced to the misery and privation of vagabondage. Frequently such a life, as well as the impulse to over-indulgence in alcoholic drinks, is a symptom of mental disease (weak-mindedness with perverse impulses, moral insanity). The etiologic significance of drinking sprees is partly that of a predisposing cause, in so far as the central nervous system is thus weakened or even anatomically changed, and therefore no longer able to withstand accessory causes; and partly that of an exciting cause, when alcohol acts on a brain predisposed in some way.

This predisposition may be due to hereditary taint, functional weakness as a result of excesses, exhausting diseases, head injuries, and painful or angry excitement (indulgence in drink in order to overcome care). Under such circumstances even a single indulgence may induce a psychosis. However, in the majority of these predisposing conditions there is a lessened power of resistance to the vasoparalytic and direct toxic effects of alcohol.

Where alcoholic excesses are associated with a psychosis already existing (melancholia, mania, dementia paralytica) they increase the intensity of the latter, so that melancholic depression becomes active melancholia or raptus, and maniacal exaltation reaches the intensity of mania.

The psychoses in which the abuse of alcohol plays an etiologic rôle present, as might be expected from the variations of the pathogenesis and the influence of the causal factor, various clinical features; still it must not be overlooked that, when the abuse of alcohol is the only or predominating cause of disease, the disease-picture has a specific clinical character, and one is justified in such instances in speaking of alcoholic psychoses. The description of these belongs to special pathology, and will be found in the section entitled "Chronic Alcoholism, with its Complications."

In those cases in which the abuse of alcohol acts only as an accidental cause, and when it is not the only cause, the psychoses that result present no specific characteristics. At most in such cases, where, shortly before the outbreak or during the mental disturbance, alcoholic excesses have been committed, there are traces of alcoholic intoxication and episodic hallucinations in themselves foreign to the disease-picture which recall the errors of the senses of chronic alcoholism and especially of delirium tremens, thus giving color to the picture.

Too, when alcoholic excesses are the only or predominating exciting cause in an individual predisposed by heredity, head injury, or other taint, aside from the traces of alcoholic intoxication and certain suspicious visions of animals, devils, and the like, there are no symptoms which speak for the alcoholic origin of the case. However, the course of such cases, which are predominatingly acute, with sudden origin and rapid subsidence, speaks for the symptomatic nature of the disease. If there be at the same time symptoms of congestion of the brain in connection with the other signs, then the predominating influence of alcohol as a causal factor becomes at least probable.

Other Poisons.

Opium.—In a similar way the abuse of opium by the Orientals and the Chinese leads to nervous defect and psychic degeneration, just as the abuse of alcohol does in the Occident.

Cannabis Indica, or haschisch, is also capable of inducing delirium and mental disturbance.

Less frequent and more accidental mental disturbance sometimes arises as a result of hyoscyamus, conium, datura stramonium, belladonna, and poisonous mushrooms.

Mental disturbance has also been observed as a result of the medical use of atropine. Thus, Michea observed in cases of epilepsy where he was using atropine for a long time in doses as high as 0.01 gram, intellectual dullness, apathy, difficulty of articulating certain words, slight instability, loss of manual dexterity, and slight anesthesia.

Kowalewsky saw an atropine psychosis (hallucinatory insanity) in a patient into whose eyes atropine had been dropped; after the administration

of a large dose the patient saw flashes of sunlight, crowds of animals and people, and thought masses of insects were creeping over him. The patient was entirely pre-occupied with his hallucinations. After a time the usual signs of atropine poisoning were added. He recovered in ten days under treatment with morphine. My own experience and that of others show that the modern practice of administering cocaine to overcome the morphine habit, and its use as a tonic, when continued and employed in a dose above 0.3 gram a day, may induce mental disturbance (hallucinatory delirium). In these cases true physical and mental marasmus is developed. Not infrequently there is episodic toxic delirium, which, for the most part, is based upon visual and auditory hallucinations very much resembling those induced by alcohol (delusions of persecution, jealousy, visions of multitudes of small animals, etc.). Delirium consequent upon abstinence from the drug, such as occurs in those addicted to morphine, I have never seen, though I have always stopped the cocaine completely at the beginning of treatment.

Similar experiences are reported in the use of salicylic acid. A man of 25 had an attack of pleurisy and took 9 grams of sodium salicylate daily. In a few days hallucinatory delirium occurred, at first joyful, then frightful in nature. The patient saw a scaffold, heard his death sentence pronounced, and felt forms that lay on him, leading to anxiety, depression, and fear of death. The hallucinations disappeared within a week after the discontinuance of the drug, though for several weeks afterward slight anxiety and apathy continued.

Not infrequently mental disturbance has been observed in cases where wounds have been treated with IODOFORM. These iodoform psychoses are to be regarded as cases of toxic delirium. The principal symptoms are emotionality, confusion, frightful hallucinations even to the degree of furious delirium, which last from a few days to a few weeks. Usually there is rapid recovery after the treatment with iodoform is discontinued. Sometimes death occurs from paralysis of the medulla. The smell of iodoform on the breath and the proof of the presence of salts of iodoform in the urine are of diagnostic importance.

Mental disturbance due to ergot, even occurring as an epidemic, has long been known. Of 11 cases recently reported by Siemens, 10 presented features of stupor, the picture of toxic acute hallucinatory confusion (stormy course, multitudes of pleasant and frightful hallucinations of sight). The stuporous cases were characterized by great dullness of the sensorium and general weakening of all the mental functions, in connection with epileptiform convulsions. At the same time there were cachexia, absence of menses, and often also ataxia of the extremities and stumbling speech. As prodromes of the stupor there were frequently sensory disturbances, precordial anxiety, and delirious maniacal excitement with amnesia. Of the 11 cases, 2 were fatal and 9 recovered. Therapy consisted of stimulating diet, strong wines, and warm baths.

That the excessive use of TOBACCO may induce mental disease, especially paralysis, just as it produces nervous diseases like angina pectoris, neurasthenia, and amblyopia, has been verified on many occasions.

Richter found conditions of pressure in the head, spinal irritation, amblyopia, and angina pectoris in connection with anomalies of the emotions. The pathogenesis is sought in disturbance of central nutrition (anemia) due to narrowing of the vessels by the nicotine (irritation of the vascular centers in the medulla oblongata), and in direct trophic disturbances. The prognosis is

favorable when abstinence is practiced in connection with the use of iodide of potassium and hydro- and electro- therapeutics.

Of the vegetable substances, corn is yet to be mentioned, which, when it is used as a food after it is spoiled, or exclusively, as in northern Italy, induces the symptoms of so-called pellagrous insanity (melancholia with suicidal impulses, inanition-delirium, states of weak-mindedness).

Mental disturbances have also been observed following the improper use of chloroform, which were possibly due to its vasomotor-paralyzing effect, depression of the action of the heart, and lowering of blood-pressure. In such cases delirium has been observed, but also severe lasting degenerate disease-pictures (periodic mania, moral insanity).

In an analogous way the abuse of CHLORAL affects the mind, doubtless as a result of disturbances of nutrition, depression of the heart's action, and diminution of the energy of the vascular centers. Many individuals show a remarkable immunity to the influence of this poison. In many the continued use of chloral leads to moroseness, depression, and mental dullness. It has been repeatedly observed that the withdrawal of the usual dose of chloral hydrate leads to hallucinatory delirium resembling delirium tremens.

I have had similar experiences with the abuse of paraldehyde. In one case, where 35 grams were taken daily, tremor, loss of memory, and diminution of mental vigor were noticeable. A second case presented similar symptoms, with a daily dose for a year of 40 grams. When the drug was withdrawn a state resembling delirium tremens, lasting five days, occurred. This was complicated by a severe epileptic attack.

The injurious influence of the abuse of ABSINTHE and similar ethereal oils to induce severe toxic delirium, similar to that of drunkards, with delusions of persecution and maniacal excitement, has been largely studied by French observers. Gauthier observed, as a result of the habitual abuse of absinthe, irritability, change of character, mental weakness, delusions with predominating visual and auditory hallucinations of even a more frightful character than those occurring in chronic alcoholism; tremor, epileptic attacks, especially after renewed excesses; rapid loss of sexual power, hyperesthesia, rheumatic pains at night, and less frequently anesthesia.

METALLIC POISONS.—In workers in lead and quicksilver, along with more or less marked somatic symptoms referable to chronic poisoning, there is not infrequently implication of the mental sphere. Individual disposition, manner of life, and weakening influences—such as alcoholic and sexual excesses—are important accessory causes.

Lead Psychoses.—These occur in painters and not infrequently in mountaineers, sometimes with and sometimes without other symptoms of lead poisoning. Among the prodromes Bartens speaks of loss of flesh, gastric disturbances, earthy color of the countenance, and blue line on the gums, together with sensorial disturbances (dizziness, headache, ringing in the ears, and poor sleep), mental depression, feeling of oppression, irritability, even to the extent of elementary delusions of persecution and occasional frightful hallucinations. Epileptic attacks, paralysis, twitchings, and tremors may usher in the disease.

There are acute cases of transitory hallucinatory delirium ("transitory lead mania"—Wunderlich) which may arise spontaneously or after a prodromal hallucinatory stupor. At the height of the condition there is wild

mania, with symptoms of brain irritation and sleeplessness. The duration is usually only a few days. In favorable cases convalescence is established after sleep or stupor. In other cases there is progression to chronic confusion, or death with epileptic and comatose symptoms.

The chronic lead psychoses are cases of toxic hallucinatory confusional insanity or disease-pictures that stand in very close relation to paralysis.

Bartens observed six cases of hallucinatory insanity. There were multitudinous hallucinations (visual, auditory, sensory, and gustatory), frightful deliria of persecution, great disturbance of consciousness even to the extent of lack of recognition of friends and surroundings, and attacks of anxiety with attempts at suicide. At the same time there was rapid sinking of nutrition and motor disturbances. Only one case recovered. The pseudoparalytic lead psychoses begin acutely with sensorial disturbances (headache and mental dullness), precordial distress, frightful visual hallucinations, and deliria of persecution and poisoning, so that the condition (*"ivresse du plomb"*—Ball) at first simulates certain acute phases of chronic alcoholism. After a longer or shorter time these acute symptoms pass to dementia with paralytic disturbances of motion and marasmus, which, however, in cases that end favorably, pass away after a few months. Of ten cases reported in French literature, cited by Régis, eight are said to have recovered.

The differential diagnostic points from common paralytic dementia are the etiology, the earthy color of the face, the blue line on the gums, the acute outbreak of the toxic symptoms, and the rapid progress to the height of the disease; the peculiar disturbance of intelligence, which is not the grave disturbance of consciousness present in paralysis, but rather a mental inhibition than mental defect, and which appears as an effect of sensory loss rather than the result of a general loss of cortical functions, with disappearance of all the elements of consciousness of time and space.

Mercurial Psychoses.—As manifestations of chronic mercurial poisoning on the part of the central nervous system, Naunyn describes states of great psychic excitability to external impressions, remarkable susceptibility to fright, pre-occupation, anxiety, sleeplessness with inclination to hallucinations ("mercurial irritability"), together with simultaneous symptoms of mercurial poisoning (anemia, gastro-intestinal catarrh, salivation, trêmor). Out of such conditions mania, melancholia, and states of mental weakness may develop.

Bromism.—When large daily doses of bromide salts (exceeding 6 grams) are used continuously, about the third week poisoning occurs.

This state of bromism is manifested in a reduction of the energy of the heart (the effect of the potassium?) and the cerebral cortex. The signs indicative of the beginning of bromism are muscular weakness, tremor, and disappearance of the palatal and pharyngeal reflexes. Then stupor, even to the degree of deep dementia, occurs (great disturbance of apperception due to inexcitability of the cortical centers). Amnesic aphasia, drawling speech, and stumbling gait; general paresis, with retention of cutaneous sensibility; demented expression; difficulty in movement, decrease of muscular tone, and pale, cachectic color; marked loss of weight; irregular, rare pulse, and cardiac weakness, gastric disturbances, fetor, and heavy coating of the lips and tongue complete the disease-picture, which, in its most advanced stage, may resemble conditions met in paretic dementia. Hameau and Falret have seen death caused by cardiac paralysis or paralysis of the nerve-centers. When the

bromide is stopped these symptoms disappear in a week or two. Generous diet, alcohol, and injections of strychnine have a favorable effect. Children bear bromides better than adults; men better than women.

Poisonous Gases.—Under this heading belongs carbonic oxide gas, the influence of which, as shown by experiments and accidental deaths, induces cerebral hyperemia which may reach the extent of apoplexy and softening. Eulenburg has seen transitory mania from poisoning with carbonic oxide gas. Simon has observed encephalomalacia, which sometimes occurred only after some weeks, preceded by continual headaches and dizziness.

Moreau states that he has seen chronic poisoning by this gas in bakers, cooks, etc., who sometimes through months suffered with symptoms of brain hyperemia (headache, pressure in the temples, ringing in the ears, loss of appetite, muscular weakness), and in his opinion this predisposition formed the foundation upon which the slightest causes, especially drink, led to the outbreak of the disease (vague delusions of persecution with hallucinations of hearing and sight—phosphenes, angels, saints; less frequently delusions of poisoning, with hallucinations of smell). Whether these abnormal conditions are to be attributed merely to carbonic oxide gas, and not rather to caloric influence in connection with drink, must remain undecided.

Carbon Disulphide.—The inhalation of this gas in factories where rubber is used has been observed to induce mental disturbance. In two cases observed by Voisin, and in one case by Delpech, the symptoms were headache, deafness, dizziness, visual and auditory hallucinations, crawling and pricking sensations in the extremities, and melancholic depression followed by mania with general hyperesthesia and sleeplessness.

Autogenic Poisoning.—For the sake of completeness we should mention here the fact that the products of retrograde metabolism and their retention in the organism may give rise to states of intoxication. Thus, in the retention of urine we have uremia (somnolence, coma, epileptic attacks, with postepileptic psychic affections); also states of excitement with coma in diabetes, which has been referred to acetonemia; and psychic depression due to cholemia (icterus).

Wagner, in recent observations, calls attention to the possibility of the origin of certain forms of insanity, such as the hallucinatory, delusional, and depressed conditions, through auto-intoxication resulting from intestinal disturbances, with absorption of ferments, ptomaines, leucomaines, etc. He observes that the acetonuria and large indican elimination resulting from the decomposition of albumin in the bowel can be relieved by thorough cleansing of the intestinal tract and disinfecting it by means of calomel and iodoform.

Special mention should be made of the interesting disturbances of physical and mental development and functions, occurring as a result of abnormal development, atrophy, or removal of the thyroid gland, which has the important function to render harmless the toxic elements of metabolic processes. In connection with the functional disturbances of the thyroid and their effect upon metabolism should be mentioned myxedema, cachexia strumipriva, and cretinism. The mental symptoms incident to the first two conditions are mental torpor, slowness of thought, and weakness of mind and will, even to dementia. There have been observed periods of melancholia, stupor, and hallucinatory delirium. In addition there occur changes in the skin; subnormal temperature; weak, clumsy, and difficult movements; and slowness of speech.

PART THIRD.

Course, Duration, Termination, and Prognosis of Mental Diseases.

CHAPTER I.

Course and Duration of Insanity.

ASIDE from the symptoms, the most important phenomenon of insanity is the course of the disease. Insanity, like other diseases of the brain, presents certain modes of evolution and various possibilities of termination which have been determined empirically. In general, insanity manifests itself as a chronic disturbance of the psychic organ, the duration of which is measured by months or even years; but there are exceptional cases of the psychoneuroses of acute and subacute course, the duration of which is a matter only of weeks. So-called transitory insanity presents a peculiar type of course and duration.

1. CHRONIC AND SUBACUTE INSANITY.

It may manifest itself *(a)* as an isolated attack or *(b)* as a series of attacks in which the symptoms recur periodically.

(a) Chronic and Subacute Insanity in the Form of an Isolated Attack.

Just as in all other somatic diseases of long duration, we are able to differentiate here prodromal symptoms, a stage of full development, and a terminal stage of the disease.

The *prodromal period* of the disease is of the greatest importance to the alienist. It makes it possible to recognize the pathogenesis of the malady, and, where the danger has been opportunely discovered, it may be possible to prevent the threatened attack.

As yet, psychiatry has very little positive knowledge of the premonitory symptoms of insanity; and as long as the general medical practitioner is without such knowledge this important stage must pass unobserved, and pathogenesis and prophylaxis must continue to be unattained *desiderata*.

Only after the disease has actually broken out are earlier indications recalled, and these, based on vague and imperfect memory, as they must be, are but a poor substitute for a scientific history. Thus, scientific study of the stage of incubation of insanity is, in the main, confined to the observations made by asylum physicians in cases of a recurrence of attacks or where the disease is manifested periodically.

When circumstances favor early and expert observation of the malady, it is almost always found that, contrary to the notion of the public and physicians at large, which would make insanity a disease of sudden onset, the disease is one reaching back weeks, months, or even years, and consequent upon disturbance of the cerebral and psychic functions in a narrower sense.

Often it is difficult even for the expert to distinguish the first slight indications of mental disturbance from certain variations of feeling, of emotional excitement, of taste and capacity for work which lie within the limits of mental health. Besides, there is the fact that pronounced and decidedly abnormal states of feeling and reaction may be but the temporary and insignificant reflex of constitutional or local troubles: for example, the depression and irritability accompanying catarrh of the alimentary canal; the mental torpor and lack of energy in states of anemia and chlorosis; the want of self-restraint and incoherence at the time of puberty. Even though these symptoms are equivocal, and under some circumstances unimportant, they become significant when the person presenting them is subject to an hereditary taint or presents the signs of a neuropathic constitution. In other cases the significance of these abnormal symptoms is diminished by the fact that there have been previous disagreeable events of which the symptoms are the physiologic reaction. It is rather the unusual intensity and duration of the affective disturbances that raise the first suspicion of their pathologic foundation. Not infrequently its recognition is made the more difficult by the circumstance that the psychosis is not developed on the basis of a normal mental personality, but appears rather as an intensification of strange inclinations, impulses, and eccentricities that have been long noticed (hypertrophy of the character), and thus the change of personality is only quantitative.

Finally, those not infrequent cases are to be remembered in which a psychosis develops out of a general neurosis with its elementary psychic anomalies.

Thus, the physician of tact and of special experience is often able to recognize in the case, where the inexperienced see nothing more than chlorosis, the beginning of melancholia; to interpret correctly inactivity as abnormal lack of will; the nervousness of an hysteric person as a sign of approaching insanity; the effects of overstimulation of the brain as the precursors of dementia paralytica.

As a fact of experience, it may be stated that chronic insanity does not begin with disturbances in the content of ideas (delusions and false sense-perception), but with affective disturbances, with anomalous feelings, and states of altered emotional excitability.

Guislain's view that insanity begins with a melancholic stage is only true in a limited sense. Anxiety, irritability, and depression, which so frequently precede the outbreak of insanity, are not to be regarded merely as melancholia. The depression may be physiologic, *i.e.*, due to a depressing cause that is effectual; or pathologic, but at the same time a reactive manifestation dependent upon the feeling of threatened mental disease, of inhibition of thought, and consciousness of a lack of mental capability.

In numerous cases of mania, in all cases of primary hallucinatory insanity and paranoia, and also in various other forms of mental degeneration, no melancholic premonitory stage is observed. While in cases developed upon the basis of a taint the transition to an actual pathologic state is slow, unnoticeable, and almost exclusively of the nature of a quantitative change from the previous personality,—as an intensification of former abnormal feelings, tendencies of thought, and impulses,—or even when in such cases the outbreak is abrupt as a result of a sudden exciting cause; still, in cases of insanity not dependent upon abnormal predisposition, or at most favored only by latent predisposition, or due to powerful exciting causes, the moment of the beginning or invasion of the disease may be determined with more or less exactness.

Besides the change of the affective functions already mentioned, which may advance to such a degree as to bring about a complete change of the former character, there are also essentially formal disturbances of the intellectual processes (inhibition, difficulty of thought, imperative ideas).

Only later does the trouble advance to disturbances in the content of ideas, to new and strange associations of ideas, painful or astounding, which not infrequently, even at the beginning of the disease, awake in the patient the warning feeling of threatening insanity. Frequently before these abnormal feelings and ideas can be clearly described as a part of the waking life, these new thoughts express themselves in dreams, where the ordinary lively mental intercourse with the external world ceases and the abnormal processes arising in the brain itself, as well as the changed sensations coming from peripheral organs, attain directly the sphere of unconscious mental life.

At the same time, as the early expression of disturbances of nutrition and circulation of the brain, there are headache, vertigo, disturbance of sleep, mental fatigue and apathy, emotional irritability or indifference, inactivity or instability.

As symptoms of the accompanying disturbance of the vegetative processes, there are often gastric disturbances, manifest in anorexia

or desire for foods and drinks (alcohol) previously undesired by the individual.

As expressing the disturbance of function in the nervous centers especially, there is manifest a general feeling of discomfort like that which occurs shortly before the outbreak of a severe febrile disease: a feeling of bodily weakness, exhaustion, sensory and sensorial hyperesthesia, aura-like feelings of heat. Very early the change in the psychic content makes itself manifest in an alteration of the glance, the mien, and the attitude.

Even though these prodromal symptoms are more or less common to all cases of chronic insanity that have developed out of a previously healthy personality, yet the nature of the prodromal symptoms in their further course of development depends upon the nature of the special form of disease that is evolved (*vide* "Special Pathology").

The *transition to the acme* of the disease in cases of chronic insanity is seldom sudden, more often gradual, through increase and intensification of the prodromal symptoms.

Like other cerebral and nervous diseases, chronic insanity manifests an alternation of remissions and exacerbations.

The intensification and diminution of the disease are to be referred in part to the states of changing excitability of the nervous central organ in response to the influence of the pathologic process (temporary exhaustion, increased excitability due to summation of stimuli), to episodic phenomena occurring in the disease-picture (precordial anxiety in melancholia); and possibly these alterations may be in part due, also, to external cosmic conditions. Intercurrent physical processes, too, like the almost regular exacerbations that occur in tainted individuals and those subject to uterine disease, at the time of menstruation, are here of influence.

In many cases of melancholia and mania and in paralytic and senile dementia there is sometimes a strictly typic and periodic alternation of the symptoms, or of the series of symptoms, occurring daily, or at intervals of several days, which is almost always of bad omen. Just as the development of chronic insanity is slow, so is recovery from it gradual and by successive stages, the remissions becoming more and more marked and noticeable. The mental improvement may coincide with that of the somatic functions (nutrition, sleep, return of the menses, etc.); it may follow it or in rare cases precede it. The intensity and number of the symptoms diminish; any delusions that are present become weaker, more fragmentary, and are shaken by the patient's reawakening judgment; hallucinations and illusions become less frequent and less distinct. Inclination to work and to resume

former habits reappears. However, it is often only after repeated recrudescence and after overcoming conditions of mental torpor and physical exhaustion that the former personality is at length re-established.

Consideration of the general course of insanity brings out the interesting fact that there are some psychoses which present a progressive course, and others which, after they have reached their height, remain stationary, save for slight variations, and, no matter how long they continue, do not end in so-called states of secondary mental weakness. This is true of certain constitutional affective psychoses (constitutional melancholia) of a reasoning character, and also, to a certain extent, of the various forms of paranoia.

The psychoses presenting a progressive course may be typic or atypic.

The first (vesania typica—Kaulbaum) occur only in individuals devoid of a high degree of nervous taint. They begin with melancholia, which passes into mania, ending either in recovery or a state of secondary mental weakness (*vide* "Secondary Delusional Insanity," "Dementia"). Thus, these various forms are but different stages of one typic disease (psychoneurosis).

Combined Psychoses.—A newly recognized fact that is important for a clinical understanding of many cases is that other forms of insanity may complicate one form already present, in which case two or more forms of disease combined may run their courses, each undisturbed by the others. In such a case, of course, there is nothing like the alternating pictures presented by a circular psychosis, or a psychosis taking the place of a vesania typica, or the phases of a complicated disease-picture like paralytic dementia; but there is the independent and simultaneous existence of two or more forms of disease in the same patient.

Aside from the psychoses that are developed on the basis of a pre-existing imbecility, moral insanity, or acquired mental weakness (cases by Siemens), cases taken from literature and experience may be mentioned:—

1. Cases of paranoia with episodic menstrual insanity (personal observation); paranoia with paralysis (Billod); masturbatory paranoia with development of paralysis (Hostermann); three cases of paranoia with paralysis; paralysis with hallucinatory paranoia (two cases, personal observations); paranoia with intercurrent melancholia, and one with periodic mania (personal observations).

2. Epileptic insanity with non-epileptic mental disturbance (Magnan). (Epileptic insanity with postepileptic delirium, and paranoia with delusions of persecution and grandeur.) (The epileptic disturbance disappears under treatment with potassium bromide.) Epileptic and circular insanity (personal observation); epileptic insanity with imperative ideas and alcoholic delusions

(Magnan); epileptic insanity with later development of melancholia and alcoholic delusions (Magnan); epileptic and paralytic insanity (Westphal); epileptic insanity and paranoia (Gnauk); epileptic delirium and delirium tremens (personal observation, and Magnan). When memory of the events of the epileptic delirium fails, that for the events of the delirium tremens may still be present.

3. Psychoses and alcoholic insanity (quite aside from those cases where the fundamental picture, as of mania or melancholia or paralysis, is colored and influenced by alcoholic excesses); chronic hallucinatory paranoia and alcoholic delirium (Magnan); dipsomania, and delirium tremens (Magnan). Here it is impossible to enter into a consideration of the forced explanations and hypotheses put forward by Magnan. The relation is clearest where psychoses are combined with alcoholic insanity.

In cases of chronic insanity that recover the duration of the disease is months or years. The duration of the stage of complete development is not dependent on the length of the prodromal stage; on the contrary, the period of convalescence usually bears a time-relation to the duration and intensity of the acme of the disease.

Chronic insanity may end in recovery,[1] stationary or progressive states of mental weakness, intermissions (latency of symptoms), or death. Recovery is frequent in the psychoneuroses. If this does not occur, then there results a state of so-called mental weakness.

Intermissions are not infrequent in paranoia. A fatal result may be due to the advance of the pathologic process to vital centers (paralytic dementia, acute delirium, senile dementia), or it may follow indirectly upon exhaustion or inanition due to the disease; in other cases death may be caused by tuberculosis developed as a result of insufficient nutrition and imperfect respiration; or suicide or accident may intervene to bring the end.

(b) Chronic Insanity in the Form of Periodic Attacks.

The fundamental cerebral disease, though continuously present in such cases, like the manifestations of intermittent fever, expresses itself in recurring paroxysms of mental disturbance (usually mania, less frequently melancholia, or a combination of both in so-called circular insanity). In contrast with the development of a chronic and non-periodic psychosis, in these cases the outbreak is sudden, the height of the disease is quickly attained, and, if at this stage remissions are not marked, the attack may end quite suddenly. Prodromal symptoms

[1] Formerly such recoveries were often thought to take place with so-called critical excretions; but these are nothing more than the signs of the re-establishment of the trophic and secretory functions of the body following upon the recovery from the brain disease.

of the approaching outbreak may be entirely wanting, or they may precede it by only a very brief period. When such symptoms are present they vary extremely in different cases, but are quite typic for the single case, comparable often with the aura of epileptic attacks. For the most part, they consist of congestive symptoms, sleeplessness, and irritability; sometimes there is depression and feelings of anxiety, headache, neuralgia, paralgias, gastric disturbances, or obstipation.

With reference to the development of the symptoms in detail and their content, the course of each paroxysm is decidedly similar and typic of all the others, presenting at most only variations of intensity. With the disappearance of the paroxysm there is an immediate restoration of the former personality; or, if the attack has been intense and of long duration, recovery may take place after a correspondingly prolonged period of exhaustion. The duration of the single attack may be weeks or months. The intervals between attacks may vary from weeks to months or years.

It is in no sense strictly typic, since varying internal and external conditions are of influence. The intensity of the attack is also to be considered, for after an attack of especial violence the next outbreak is usually postponed. It is customary to call the intervals between the attacks lucid intervals, but they are never strictly so. By the side of the nervous symptoms of the fundamental disease mental symptoms (irritability, variability of humor) are not wanting, and mental weakness soon appears as a lasting alteration.

Aside from their longer duration in general, these intervals differ from an intermission in that in the latter the psychosis begins anew in the new attack at the point where it ceased at the beginning of the latent condition; whereas in the periodic psychoses the whole symptom-complex of the attack runs its course again from the beginning. They differ from a relapse in that the new attack is clinically different from the first, while the periodic attack is stereotyped and similar to the first in every detail; and, besides, in the interval the state of mind is not perfectly free, but rather presents traces of the fundamental disease that has become latent only to a certain extent. The general course of periodic insanity varies. In a very few cases the attacks cease to occur, either spontaneously or under the influence of some severe constitutional disease (typhoid). If this happen at a time before the frequently recurring attacks have induced a state of mental weakness, the result is recovery; but more frequently the attacks cease only after a state of mental weakness has become established, and more frequently still the latter occurs without cessation of the attacks; indeed, sometimes the attacks, with the establishment of mental weak-

ness, become longer and longer, until they flow into one another and finally form a continuous insanity in which the continually recurring attacks are only to be distinguished as exacerbations.

2. Transitory Insanity.

In contrast with the forms of insanity that require months or years to run their course are certain psychopathic states characterized by the fact that they last but a few hours or days.

In these cases the sudden beginning, the rapid attainment of the height of the disease, with only slight variations of intensity, and the sudden and critical end of the attack, with the immediate restoration of the former mental state, combine to make a marked distinction between this and the usual forms of chronic insanity, in which only certain periodic forms resemble transitory insanity. Besides, the latter is characterized by the deeper disturbance of consciousness during the whole of the attack, while defects of memory are never wanting, and all the features of the picture present delirious characteristics. The explanation of these peculiarities of the course and nature of transitory insanity is to be found etiologically in part in the fact that it is in reality a reactive manifestation to powerful influences affecting the brain temporarily (disturbances of the circulation, poisons, emotions, fever). Moreover, congenital disorders of development or acquired functional anomalies may facilitate or intensify the effect of these injurious influences. Frequently in these cases the brain is one that reacts abnormally in its vasomotor functions, and this abnormal form of reaction (vascular spasm or paralysis spreading over a large area) may be congenital or an hereditary anomaly; or it may have been acquired as a result of brain disease, injury, lues, focal disease of the brain, chronic alcoholism, exhaustion, etc., and thus be one of the symptoms of a complicated cerebral and nervous disease. Under all circumstances it is necessary to insist clinically that transitory insanity is a symptomatic disease-picture. In the individual case it is always necessary to try to refer the outbreak to the special neurosis or cerebral disease that causes it. Pathogenically cases of transitory insanity may be referred (1) to sudden alterations of blood-pressure and blood-distribution brought about by vascular spasm or paralysis (transitory mania, transitory states of fear, pathologic affects); (2) to sudden and marked disturbances of the nutrition of the brain as a result of qualitative changes of the blood, dependent either upon the presence of foreign material or the products of retrograde metamorphosis, or the absence or deficiency of certain normal constituents (toxic delirium and inanition-delirium).

The forms of disturbance of consciousness in transitory insanity may be states of somnolence, sopor, stupor, and semiconsciousness. Upon this basis of consciousness gravely disturbed by anomalies of the circulation, blood-pressure. or nutrition, even to the extent of producing transudative changes, various symptoms of irritation—in the form of hallucinations, delusions, fears, and psychomotor excitement—may arise. These are accompanied by other reactive anomalies of feeling. Thus there arise a great number of clinical pictures, differing because of peculiar grouping of symptoms. The states of neurasthenic, epileptic, and hysteric transitory insanity, though they belong here, will be fully treated in chapters on special pathology, because they present special disease-pictures. Toxic delirium and the delirium of fever and inanition have been considered in the section on the causes of insanity. There then remain to be described here, as forms of transitory insanity, transitory mania, transitory fear, pathologic affects, and abnormal states of reaction to alcohol.

(a) Transitory Mania.

Modern science applies this term to a form of mental disturbance affecting individuals, sound both before and immediately after the attack, which begins suddenly and passes into recovery through a deep sleep, with profound disturbance of consciousness during the whole duration of the attack, so that there is not the slightest memory of the events of the time of the mental disturbance. This period forms an actual hiatus in the continuity of consciousness. Upon the foundation of this profound disturbance of consciousness there are manifestations of mental excitation (delusions, false sense-perceptions, motor anomalies) which lend to the concrete clinical picture the features of furibund mania in one instance; in another, those of hallucinatory delirium. The term mania is little suited to such a disease-picture, which is certainly much more like delirium than mania, and at most it resembles mania only in the occasional presence of the symptoms of the rapid succession of ideas and aggressive and essentially organic and involuntary motor activity.

The whole condition presents the features of an intense cerebral irritation affecting the sensory, ideational, and motor centers, suspending consciousness. This cerebral irritation is caused by an intense congestive cerebral hyperemia; at least the attack is ushered in by manifestations of cerebral congestion (vertigo, headache, a feeling of being stunned, which may even reach the intensity of an apoplectiform attack), irritability, sensibility to light and noises; and similar symptoms are present during the outbreak (congested,

feverish head; injected conjunctiva; full, soft carotid pulse). Other signs of cerebral irritation are sometimes observed in the form of salivation, grinding of the teeth, and partial tonic and clonic manifestations of spasm. The height of the outbreak is rapidly attained after brief initial symptoms; self-consciousness is lost, and the patient becomes delirious and raving. The content of the delusions and hallucinations is mainly of a frightful character, though some pleasant delusions are interspersed. The agitation of the patient, who is devoid of consciousness of self, is unbounded and purposeless, partly as reaction in response to the delirious and hallucinatory phenomena, and partly as expression of the intense irritation of the psychomotor centers. Any reflex in the nervous paths of speech finds expression in inarticulate howling and shrieking; only now and then in the incoherent flight of ideas are disconnected words and sentences to be distinguished.

Respiration and circulation are increased with the intense jactitation, and the patient is often actually bathed in sweat. After half an hour or a few hours the raving decreases, the pulse and respiration become normal, and the exhausted patient sinks into a sleep, out of which he awakes, after a few hours, completely lucid. In a few cases after sleep has once occurred there is a recrudescence of a paroxysm.

At most, for some hours after the attack there are traces of the hyperemia that has not yet entirely passed away (vertigo, headache), and the exhaustion and great need of sleep that might be expected after the paroxysm.

Youth, plethoric constitution, choleric, irritable temperament, and tendency to cerebral congestion may be mentioned as predisposing causes. The latter tendency, as a sign of diminished resistive power of the vasomotor system, may be due to congenital conditions, or may be acquired as a result of excesses, disease, repeated labors, head injuries, lues, or continued cares and anxieties.

Among the influences that excite the attack are states of emotional excitement (anger), excesses in drink, confinement in a close and hot atmosphere, and the heat of the sun,—all of which tend to induce vascular paralysis.

Genuine cases of transitory mania have thus far only been observed as beginning in the waking state. An attack beginning immediately on awaking from sleep must raise the suspicion that it is of the nature of an epileptic delirium. The same suspicion must be entertained when relapses occur. These occur but very infrequently in genuine transitory mania. This disease is, under all cir-

cumstances, very infrequent, and the majority of the cases that are classed under this head in literature must be regarded as of an epileptic nature, and the attacks should be interpreted as epileptic equivalents. Even pathologic affects—abnormal reaction to alcohol, melancholic ecstasy, hysteric delirium, and attacks of ordinary acute and angry mania—have often been erroneously called transitory mania.

With reference to diagnosis, it is necessary to insist on the following characteristics: the sudden beginning of the disease in individuals mentally sound both before and after the attack, and particularly in those free from epilepsy; the critical termination in a deep sleep; the profound disturbance of consciousness, with complete subsequent defect of memory for the events of the attack; and the symptoms of intense congestion of the brain which usher in and accompany the disease-picture.

Anatomically the whole group of symptoms may be explained as the result of an intense and transitory congestion of the cerebral cortex.

The prognosis is favorable. Termination in apoplexy or inflammation of the brain has never yet been observed. The great infrequency of relapses has already been mentioned.

The treatment consists of restraint of the patient, who is very dangerous both to himself and others, and the promotion of sleep by chloral hydrate, which in this condition can hardly be administered in any other way than by enema. The hypodermic administration of ergotine and duboisine sulphate is also worth a trial.

CASE 2.—Transitory mania due to caloric influences.

Mrs. N., aged 36. Aside from infrequent attacks of migraine, she had never been ill. Moderate manner of life; not sensitive to heat; of a healthy family and without epileptic or epileptoid antecedents. For a fortnight she had suffered with a severe cold in the head and catarrh of the trachea. November 25, 1877, she felt chilly in the evening and had a very hot fire made in the large iron stove in her room. About 11 o'clock at night she suddenly felt as cold as ice, and then burning hot, and she felt the blood mount to her head. She became delirious and violently excited, sang songs, and ran about in the room seeking her children. Suddenly she became frightened and raving. The physician, who was called in about midnight, found the room at a temperature of 30° R. The patient was in a state of furibund raving, crying that her head was to be cut off; she frothed at the mouth and raved, a prey to intense terror. At times she laughed, sang, and rhymed. Her head was hot and red, the pupils dilated, and reflex excitability was increased. The physician administered 0.03 gram of morphine by injection, without effect. Only toward morning did the patient fall asleep, and after some hours she awoke perfectly lucid, and tried to account for the surroundings of

the hospital. Her temperature was subnormal. She had not the slightest knowledge of what had happened. She only remembered that she had fallen asleep with a feeling of heat. She vomited, felt exhausted and dizzy (morphine). She had completely recovered by the 27th. Aside from the catarrhal troubles mentioned the patient presented nothing abnormal.

(b) Transitory States of Fear.

States of transitory insanity occur in which, with the great disturbance of consciousness, the patient is troubled with intense feelings of fear and ideas of threatening danger. Such conditions may last hours or days. Whether memory for the time of the attack be summary or wanting depends upon the extent to which consciousness is disturbed. The state of fear may present the most varied degrees of intensity, from a simple anxiety to inhibition of all the mental activities. At the height of the disease frightful hallucinations (auditory and visual) and terrifying ideas of threatening danger, in which the feeling of fear finds its concrete outlet, are seldom wanting. As a result of the fear and delirium, motor impulses arise that may present all degrees of intensity from simple motor unrest to violent acts of desperation directed against the source of threatened danger.

Intense sensations of fear, felt, for the most part, in the precordial region, with profound disturbance of consciousness, and lasting minutes or hours, with stormy reflex mental activity as a result of the state of fear, are called *raptus melancholicus*. Since this condition occurs, for the most part, as an episodic manifestation in melancholia, it will be described later under that heading. In this place we are concerned only with independent states of transitory fear in persons sound mentally, both before and after the attack. The states of petit mal, which occur in epileptics and resemble this condition symptomatically, will be described under the heading of "Special Pathology" (*vide* "Epileptic Insanity").

In the transitory states of fear we must also insist upon their symptomatic significance, and seek their pathogenic explanation in acute disturbances of the circulation of vasomotor origin. In many cases there are symptoms of cerebral anemia which precede and accompany the attack; and the symptoms of vascular spasm in those arteries that are open to examination make it seem probable that similar functional disturbances simultaneously affect the cerebral vessels.

The predisposing causes of transitory states of fear are neuropathic constitution, and not infrequently the marked neuroses: hysteria, hypochondria, and neurasthenia. The latter is especially

important where it is due to masturbation. Puberty, pregnancy, lactation, and the menses seem to increase the disposition, as do also mental and physical overexertion, especially lack of sleep.

As exciting causes may be mentioned emotional excitement, loss of blood, neuralgia, and also, perhaps, alcoholic excesses, gastric troubles, and smoking strong tobacco.

The prognosis is favorable. Relapses are not infrequent. During the attacks the patient is dangerous to others, and especially to himself because of his wish to die. Warm baths, injections of morphine, chloral hydrate, and amyl nitrite have the effect of ameliorating and shortening the attack.

CASE 3.—Transitory fear on a neurasthenic foundation.

L., aged 34, single, workman in an iron foundry, was arrested by the police as he was about to throw himself into the river, and, being regarded as insane, he was brought to the clinic in Gratz. The patient was confused, delirious, and mentally inhibited, and he appeared overcome. He declared that he was afraid, that he had seen a crowd of drowned men, that he had tickled one with a straw, and that the corpse had come to life and taken hold of him. He then declared that he constantly saw a black man, who seemed to be a worker in iron, and who followed him everywhere. He said that on that account he was afraid, and that the only recourse he had was to throw himself in the water; that a soldier had seized him and brought him there. At the time nothing more was to be learned from the frightened and confused patient, who then drew the covers over his head to avoid the sight of the black enemy, and thus he passed the night quietly, but without sleep. On the following day (January 8, 1882) the patient was frightened, inhibited, and hid in bed. On the 9th, after sleeping all night, his mien became freer, and he noticed that he was not at home, and sought to find out his whereabouts. The phantom had disappeared, but the patient still felt as if a weight were pressing on his head and chest. He saw everything as if in a fog. January 10th the patient became lucid, and recognized his surroundings, but he complained that he felt pressure and distress in his chest, and that his head felt as if it were in a vise. His memory returned by degrees. He said that on the 5th, while at work, he became afraid. He felt as if he must run away. The night of the 5th he passed without sleep. The morning of the 6th he went to work as usual. He had no rest from his fears. About ten o'clock he returned home, dressed himself, and went into the town. He was driven on with irresistible force. He drank a glass of beer in a restaurant and then wandered about in the streets, going to a theater in the evening. In the gallery he became dizzy, and so he bought a ticket for the orchestra. However, his fears did not allow him to stay long in the theater, and he wandered about in the streets until he came to the railway station, where he was taken with the thought, without motive, to go to Vienna. He passed the night at a hotel, the name of which he knew. Early on the morning of the 7th the vision of the ironworker first appeared. He wandered about, and remembered that he saw a funeral procession, and recalled several of the places where he had been and the fact of his arrest. He had no memory of the events of the 8th.

The patient was without hereditary taint, devoid of all epileptic antecedents, and did not drink. In 1880 he suffered with cholera morbus, and later with intermittent fever. He felt that he was weakened by this sickness; previously he had always been healthy. In his work he was much exposed to caloric influences, and as a result he had often had dizziness and headache. His work was very laborious, and besides he had to endure a certain amount of emotional strain. For three weeks he had felt increasing fatigue, and had slept badly, having disturbing dreams of fire and of falling over a precipice. It became more and more difficult for him to work; he began to tremble easily, and on rising in the morning felt tired and depressed; he perspired even when it was cool, and felt pressure in his head, palpitation of the heart, and precordial distress. He could not stand even a small amount of alcohol, for it made him feel intoxicated. Eight days before the attack he flew into a violent passion over an argument.

The patient was of a medium height; fairly strong, but somewhat anemic; without fever. Certain of the spinous processes of the dorsal region were somewhat sensitive to pressure. The spleen was not enlarged, and the functions of the vegetative organs were not in any way disturbed. Masturbation was denied, and there was nothing to raise suspicion of it. The patient continued lucid and free from fear. He continued to present neurasthenic symptoms, which were improved by tonic treatment. His sleep was still disturbed by awful dreams. January 28, 1882, the patient was discharged recovered. There has been no relapse.

(c) Pathologic States of Emotion.

Emotions or affects may become abnormally intense and require an unusually long time in subsiding. Such conditions we speak of as pathologic states of emotion. An emotional state seems abnormally intense when the affected individual loses consciousness and his motor acts lose the characteristics of voluntary acts. Such a pathologic affect may continue hours or even days. Strictly speaking, in such a case as this the condition is no longer an emotional state, but rather a transitory state of insanity due to emotional shock. Such a condition causes more profound and enduring changes of vascular innervation than that which accompanies the ordinary emotion; that is, an emotion which is not intensified to the extent that consciousness is lost and quickly disappears. In accordance with the nature and cause of the emotion, the disturbance is accompanied either by vasomotor spasm (fright) or by vasomotor paralysis (anger). The widespread distribution of the disturbance of vascular innervation indicates that the vasomotor centers are directly affected by the emotional shock. Under all circumstances the distribution of blood and blood-pressure are subjected to a sudden and profound disturbance, and this fact explains the most prominent clinical symptom,—the profound disturbance of consciousness, which may go even to the extent of complete suspension,—with which the subsequent imperfec-

tion of memory or its complete failure for the events of the attack correspond. The conditions that favor the origin of pathologic emotions are multitudinous.

In the first place, the nature of the emotion is important. Only the depressing affects of fear, fright, and anger attain pathologic intensity, and that the more easily, the more unexpectedly the emotion begins, and the more the accompanying idea threatens personal interests (life, personal and sexual honor).

But the state of the vascular centers affected at the time of the emotional shock is decisive for the result. Their abnormal excitability or exhaustibility may be either an enduring or a temporary condition. As a continuous characteristic, abnormal reaction of the vascular centers is frequently one of the manifestations of an hereditary taint (abnormal emotional irritability), of an arrest of development of the brain (mental weakness), of a neurosis (hysteria, epilepsy, hypochondria, neurasthenia, chorea, etc.), of an acquired state of weakness of the brain after apoplexy, head injury, mental disease, etc., or an existing cerebral disease (beginning insanity, chronic alcoholism, cerebral syphilis, etc.).

In such conditions there is frequently at the same time an abnormal impressionability of the vascular system of alcoholics (*vide* "Conditions of Pathologic Reaction to Alcohol").

Temporary functional weakness of the vasomotor centers may be induced by the weakening influence of diseases which cause waste, pain, and loss of sleep; the puerperal state, mental and physical strain, lack of food, troubles, cares, and passions. It is also probable that a normal brain is capable of reacting abnormally in a pathologic emotion, if alcoholic excesses or high external temperature coincide with an emotional shock.

The forms of pathologic emotion may resemble those of transitory mania (*"ira furor brevis"*); or they may take the form of inhibitory stupor (due to vascular spasm or vascular paralysis, with subsequent edema) or "confusion." States of confusion may present slight degrees of difference dependent upon the episodic occurrence of hallucinations and delusions, usually as partial after-images and after-effects of the exciting cause; or the confusion may be uncomplicated—a dreamy confusion of ideas with inhibition of association and profound disturbance of apperception. In this condition the disturbance of the mental functions may be still further increased by aphasia and paraphasia (fright).

The termination of these pathologic emotional states usually takes place suddenly, after lasting a few hours or days. There are

cases which end in chronic insanity or in a direct loss of mind which passes into permanent dementia.

CASE 4.—Confusion, followed by stupor, due to fright.

G., aged 11, schoolboy. Mother neuropathic; no epileptic antecedents. The patient developed well, and was never sick until fourteen months ago. At that time he had a fall with concussion of the brain, and is said to have been unconscious after it for several days. For some time he had been noticed to be unusually emotional and timid. On September 22, 1880, his father threatened to whip him. At this he was very much frightened, ran away, and was brought home later all confused and disturbed. After this he could do nothing more in school, and understood nothing of what was taught. While in this condition, on the 25th, he had his ears severely boxed. After this he became completely stuporous, inhibited by fright, and stared straight before him. On the 26th, when the patient was received, he was confused and would not speak. Pulse, 60 and very small; no fever. No signs of degeneracy. His development corresponded with his age; somewhat anemic. Left to himself, he stood on his head, covered his face with his hands and the bedclothes, or rolled about on the floor. Deep disturbance of consciousness. Now and then his confused mien was enlivened by a smile. The pupils were continuously dilated, but reacted. His nights were quiet. Until the morning of the 30th the patient was confused and hid himself in corners. On the 28th and 29th he was salivated for some hours, and once he tore his shirt, another time his hat, looking into it roguishly; occasionally he sang and whistled. When asked about his health he smiled cunningly and said: "Don't know." After a good night's sleep the patient awoke on the morning of the 30th recovered. He had only a very summary memory of the events of the attack. He could remember nothing of his hallucinations and delusions. He said he did not know what he was doing; that he had been foolish. It seemed that he had awakened out of a confused dream. The patient remained well.

(d) States of Pathologic Reaction to Alcohol.

The reaction of the normal brain to an excess of alcohol has already been alluded to on page 34. There are states of pathologic reaction to alcohol that are not ordinary drunkenness, but actual transitory insanity.

The amount and nature of the drink are of subordinate importance; constitutional and pre-existing morbid conditions are in these cases the important elements. At any rate, the manner of their origin is not so much directly chemic (disturbance of the nutrition of the ganglion-cells of the cortex—intoxication) as dynamic, through a paralyzing influence on the vasomotor centers, with a consequent condition of congestion.

The etiologic factors are essentially the same as those that are effectual in pathologic emotional states; but here the weakening influence of continued alcoholic excesses plays a prominent rôle. Aside from alcohol, which may play but a relatively unimportant rôle,

the exciting causes are intense emotions, fasts, sleepless nights, and caloric influences.

Delirious states of semiconsciousness and hallucinatory delirium occur, probably only after long-continued abuse of alcohol; and also similar states of transitory mania.

The states of acute delirium call to mind the grand mal of epileptics. After initial symptoms of alcoholic intoxication, more or less pronounced, there develops a condition of increasing fear and frightful auditory and visual hallucinations. Consciousness is extinguished. The patient wanders about, tortured by horrible fears and a tumult of hallucinations; he, as in a dream, looks upon his surroundings as threatening, and raves and storms aggressively at the height of his terror. States of stuporous remission may be interposed. After a few hours or days the patient comes to himself with amnesia for all the events of the attack.

With reference to the differential diagnosis of this condition and an ordinary state of drunkenness, the following points are to be considered:—

1. There is a want of relation between the amount of alcohol consumed and its effect, because inner organic conditions or accidental influences induce a cumulative effect.

2. The association of cause and effect in time is not that observed in the ordinary state of drunkenness. The progressive increase of alcoholic symptoms is wanting here. The pathologic state of intoxication occurs immediately at the beginning of the relative excess, or later with the appearance of some intensifying influence (emotion) which increases the latent alcoholic congestion.

3. There is also a qualitative difference from an ordinary drunken condition. There is developed a more or less coherent delirium; apperception disturbed by hallucinations; maniacal symptoms, with impulsive acts, outbursts of rage, and destructiveness. The movements are not awkward and ataxic, as in drunken persons, but have maniacal features—sure, powerful, and energetic.

The profound disturbance of consciousness corresponds with a complete absence of memory for the period of the paroxysm. The paroxysm is initiated and accompanied by symptoms of cerebral congestion (flushing, headache, hyperesthesia of the sense-organs).

CASE 5.—Delirious state of semiconsciousness after indulgence in alcohol.

P., aged 30, ironworker, drinker. Some years before he had had a severe attack of typhoid fever, and since then he had shown a remarkable intolerance of alcohol. No epileptic antecedents.

March 15th, in a circle of friends, he got drunk. Suddenly he left the drinking place, went to the cashier of the works, and demanded an advance of wages, threatening to hang himself if his demand were not complied with. When he was told to come again in an hour, he went home, made a bundle of his best clothes, took them to the saloon-keeper, saying: "There are my things; I am going to hang myself." Then he ran out, climbed over a seven-foot wall, then up a tree, and, fastening a rope there, he hung himself. He was followed and cut down, and though he had already become asphyxiated, he was restored to life. Thereupon he raved and stormed and could scarcely be approached, and it was with difficulty that he was secured. On the 16th he became quiet and exhausted, and in this condition he was brought to the asylum. There he came to himself in a state of astonishment on the 18th. He knew absolutely nothing of the events of the period that had elapsed since he had left the saloon. On his neck there was the mark of a rope. The patient was mentally exhausted, complained of headache, and there was tremor of the fingers and tongue, and dilated pupils. Excepting a gastric catarrh, there was no vegetative anomaly. By the 26th all symptoms had disappeared, and the patient left the asylum.

CHAPTER II.

Morbidity. Important Intercurrent Diseases.

THE morbidity of the insane is greater than that of the sane at the same period of life.

This is partly due to the fact that many insane persons are afflicted with a neuropathic constitution which reduces their power to withstand external injurious influences; partly to the fact that the mental disturbance induces irregularity in taking food, irregularity of life, and directly or indirectly profound disturbances of nutrition (anemia) through its influence on the vegetative organs, and renders the patient insensible to external injurious influences (cold, pain), and thus leads him to expose himself more. In melancholic patients, too, the respiration is often imperfect, and the decarbonization of the blood is thus defective; also in dementia physical exercise is frequently insufficient. Then, where the insane are not cared for in hospitals, there is the traditional neglect in their care, or the opposition on the part of the patient; on the other hand, in asylums, usually overcrowded, there is to be considered the unhygienic influence of too many patients housed in a limited space; and, finally, it is to be remembered that the cerebral disease may extend and involve other vital portions of the central nervous system. Insanity does not establish immunity against any other form of disease. All the acute and chronic maladies that affect the sane are observed in asylums for the insane. On account of their lessened power of

resistance, when epidemics break out in asylums, the insane are more easily attacked and the mortality is greater than that of the sane under similar circumstances. Carcinoma seems to be somewhat less frequent in the insane than in the sane.

The recognition of intercurrent somatic diseases, even in severe forms, is a matter of peculiar difficulty, because the disturbance of consciousness and the analgesia of many patients do not permit them to appreciate the disorders of general feeling. In such patients diagnosis is still more difficult than in children, who will at least react to pain. Thus it happens that typhoid, pneumonia, and other severe diseases run their course with the patients walking about, and they are discovered only when the patient is about to die or on the postmortem table. Since, for the most part, the patients are weak and cachectic, the prognosis is always more unfavorable than in the sane.

Among the somatic affections of the insane, constitutional anemia, especially in females, plays an important rôle.

Many of the chronic insane die simply of anemia and marasmus. Unknown trophic causes, dependent upon the central disease (sympathetic), must be assumed to explain many of these cases of anemia—which yield neither to dietetic nor medical treatment, and which begin before puberty and continue through life.

Inflammatory affections of the respiratory organs are very frequent and important. Pneumonia is the cause of death in about one-sixth of the cases. Hypostatic pneumonia is especially frequent in dements affected with marasmus, and it is to be referred to weak action of the heart and imperfect respiration. A form of pneumonia due to vascular paralysis dependent on the cerebral process is frequently a cause of death in paralytics (Gaye). Croupous pneumonia is also of frequent occurrence, and its origin is favored by the chilling to which many patients are subjected, especially maniacal persons.

As in the case of the aged, pneumonia in the insane runs a latent course, as a rule, without chill, cough, or expectoration; so that its presence is shown only by physical signs. Loss of appetite and an adynamic condition are often the only outward signs of the disease.

Pulmonary tuberculosis is very frequent in asylums. In 428 fatal cases Dagonet found 109 cases of pulmonary phthisis. Hagen's statistics also show that pulmonary tuberculosis is five times more fatal to the insane than the sane, but, at the same time, that insanity is five times as frequent in the tuberculous as in those free from that disease. The explanation of this fact lies probably in part in the neuropathic constitution that underlies both affections, but, for the most part, in the insufficient nutrition of fasting patients, especially the melancholic, who at the same time breathe imperfectly; and, last, in the unhygienic conditions that prevail in overcrowded asylums.

Gangrene of the lungs is not infrequent in fasting patients as a result of inanition; but it may also be caused by particles of food that have found their way into the air-passages in unskillful artificial feeding (L. Meyer). Sometimes it is also one of the results of a septic process (decubitus), and

perhaps to be attributed to septic emboli. In the gangrene of inanition the course is usually of such a nature that it is initiated by loss of flesh, fever, dyspnea, catarrh, pain in the thorax, muscular weakness, and cool extremities. Then there is sweating and a pale skin and cyanotic cheeks. The sputa and breath become terribly offensive. The physical signs of consolidation of the lungs, pleuritis, and even of pneumothorax and pulmonary hemorrhage may be found. Death then results from anemia, pyemia, pneumothorax, or profuse hemorrhages in from ten days to three weeks (Fischel).

Intestinal catarrh with catarrhal erosions is not infrequent in the insane, and sometimes it is the cause of death (marasmus). Loss of appetite, meteorism, rapid loss of strength, and uncontrollable diarrhea are the most important symptoms.

Surgical affections due to self-injury or to injury at the hands of other patients are frequent in the insane.

Boils and carbuncles are not seldom the result of infections and injuries of the skin in filthy patients who roll about in straw.

The introduction of foreign bodies into the orifices of the body in silly play or *tædium vitæ* is frequent. Even articles used at table, such as forks, have been swallowed by insane patients.[1]

Facial erysipelas occurs often, due to injury and uncleanliness of the nasal mucous membrane. Conjunctivitis is often induced by contact with infected secretions—urine, vaginal mucus.

Decubitus occurs as a neurotrophic manifestation, favored by uncleanliness in paralytic and exhausted patients.

Decided fragility of the bones is not seldom observed, especially in the paralytic insane. It is, for the most part, accompanied by marked diminution of the calcium salts, and is most frequently found in the ribs, which when thus affected may be cut with a knife.

Slight contusions under such circumstances are sufficient to cause fractures of the ribs, which not infrequently induce pleuritis.

Jolly was the first observer to call attention to the occurrence of fat-emboli in the vessels of the lungs of excited patients, resulting from bruises and tears of subcutaneous fat-tissue, with dyspnea, cyanosis, collapse, and death resulting. The autopsy showed, on microscopic examination, that the vessels of the lungs were filled with drops of fat even as far as their smallest branches. At the seat of contusions where the absorption of fat had taken place, numerous gangrenous or purulent points of inflammation were found.

Othematoma (insane ear) is a remarkable phenomenon. It occurs most frequently in the upper and outer part of the auricular cartilage; also in the fossa navicularis and triangularis; less frequently in the concha, helix, and external orifice. The left ear is more frequently affected than the right, but sometimes both ears are involved. There is a circumscribed, fluctuating, bluish-red swelling, more or less considerable in size, over which the skin is intact. It develops quickly, remains thereafter for weeks or months in a stationary condition, and finally disappears, leaving a deformity of the ear. The phenomenon is due to the effusion of blood between the perichondrium

[1] The death of a paranoiac in the Northern Michigan Asylum was due to the insertion of the wooden tooth of a garden rake in the urethra.—TRANSLATOR.

and the cartilage, but according to other observers (Gudden) the effusion of blood takes place in the separated cartilage, which itself has undergone no microscopic change. When the blood is reabsorbed the perichondrium shrinks and draws upon the other parts of the ear, and thus the deformity is induced. Since simultaneously the perichondrium secretes new cartilage upon its inner surface, the cartilage of the ear becomes thickened.

Two views are entertained with reference to the origin of this interesting abnormality. A number of observers regard the affection as a neurotic dyscrasia. They contend that othematoma often develops as result of neuroparalytic hyperemia of the ears (paralysis of the vasomotor nerves lying in the path of the trigeminus); that it rarely occurs in healthy individuals, but almost exclusively in the insane, and especially in the severe and advanced stages of insanity (dementia paralytica, transitional states to secondary dementia), in which profound vasomotor disturbances of the nerve-centers are present and manifest themselves in edema, ecchymoses, decubitus, etc.

In such patients a slight injury, even simple increase of blood-pressure, is sufficient to induce effusion of blood, since the vessel-walls have undergone changes of nutrition as the result of the general cachectic state, while, on the other hand, in maniacal and epileptic patients, who are especially subject to injuries, othematoma is very infrequent. It should also be remembered that othematoma is most frequent in paralytic patients, where new formation of vessels occurs, not only in the brain, but also in other organs as the result of neuroparalytic hyperemia. Newly formed vessels, however, offer but slight resistance to external violence or to an increase of blood-pressure.

Hoffmann regards othematoma as a hemorrhagic inflammation of the cartilage analogous to hemorrhagic pachymeningitis.

L. Meyer found, as a cause of othematoma, small enchondromas in the auricular cartilage, which were often rich in vessels and induced effusion of blood upon slight injury. He also found it not infrequently in chronic diseases without insanity. In cases where othematoma occurred tumors of the auricular cartillage were always first observed, and othematoma which followed always occupied the seat of the enchondroma.

Other observers emphasize exclusively the traumatic origin of othematoma. In support of this view it is noted that the auricular cartilage is ruptured; that in individuals mentally sound violent mechanical injury may induce it, as is shown by experiments and the busts of Pancratiasts with deformed ears; that the left ear is most frequently affected because it is most prone to injury by a blow given by the right hand of another; that in institutions where injury to patients and self-injury are prevented, othematoma is extremely rare. Stahl compares othematoma with reference to its mode of origin with the cephalhematoma of the newborn.

This vexed question is not yet settled. The truth probably lies between the two views. If the fact that severe mechanical injury is necessary to induce othematoma in the healthy is remembered, then it may be concluded that the insane possess at least a predisposition to it, whether it be due to dyscrasia, disease of the blood-vessels, or to enchondroma. The fact that othematoma occurs most frequently in the left ear in itself proves nothing with regard to a traumatic cause in the above sense, for other diseases—like pneumonia, neuralgia, etc.—affect especially the left side of the body, which in a certain sense may be regarded as the place of least resistance.

As far as othematoma in the healthy is concerned, hereafter such cases should be examined with a view to determine whether there is not a taint. One day I made the acquaintance of a colleague whose left ear was deformed as the result of othematoma. In his youth the teacher had boxed him on the ear. My investigations showed that there were several insane persons in his family, and that he himself was an eccentric, original, and abnormal man.[1]

Experience has shown that expectant treatment of othematoma is the best. The occurrence of an analogous condition in the nasal cartilage has been proved by Koeppe.

CHAPTER III.

Prognosis of Insanity.

To make a prognosis in a case of insanity is one of the most responsible duties of the alienist. It is demanded very frequently, and for the most various reasons. Frequently the relatives wish to know what the result of the disease will be, either owing to sympathy with the patient or on account of important financial interests (fulfillment of contracts, continuance or cessation of business, etc.); often officers of the law demand an answer on account of possible necessary legal guardianship or the contrary; or, in the case of officials, in order to settle the question of possible resumption of duty or retirement; in the case of criminals, with reference to their commitment to an asylum in case of incurability; and finally in many countries to settle the question of marriage, or divorce when incurable insanity constitutes a legal ground for separation.

To add to the responsibility there comes the technical difficulty which depends upon imperfect data concerning the origin, constitution, and previous life-history, the uncertainty of pathogenesis, the temporary latency of symptoms; and semeiology, which scarcely goes further than a collection of empirically ascertained facts. Thus, we can but seldom be in a position to make a prognosis with certainty, and we are forced to be satisfied with a probable prognosis which borders upon certainty.

Prognosis may have reference to the *probability of life, to cure, to recurrence,* and *to transmission of the disease to descendants.*

1. Prognosis of Life.

With reference to the prognosis of continued life, in general it can only be said that, on the whole, insanity reduces the average length of life. The cause of this lies in the greater mortality of such

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[1] Many pugilists present this anomaly. It seems rational to conclude that in the majority of cases it is excited by injury and favored by vascular turgescence.

patients, especially as regards tuberculosis, and in the more unfavorable prognosis which complicating diseases have in the insane; partly, also, this is due to the nutritive disturbance of the brain which readily leads to organic changes (acute delirium, etc.) or cerebral inanition and complications (cerebral edema, convulsions). Account must also be taken of the fact that psychoses often lead to self-injuries and refusal of food as result of emotional states, and that sleeplessness leads to exhaustion. The prognosis as to life is directly dependent: *(a)* Upon the nature of the disease. Idiopathic affections, dementia paralytica, and related processes almost always end fatally. *(b)* Upon age. Fatal exhaustion readily occurs in advanced years. *(c)* Upon the stage and course of the disease. The more violent the course and the earlier the period of the disease, the greater is the percentage of fatal cases.

According to Bêhier, of 17,167 insane, 12 per cent. died in the first month of the disease, 7 per cent. in the second, and 6 per cent. in the third.

In the later stages of insanity the mortality diminishes considerably, but it remains five times greater than that of healthy individuals of like age (Hagen).

In individual cases the subsidence of excitement with the continuance of the disease, and the regular and purely vegetative life of an asylum, may, on the contrary, have the effect to prolong life; thus there are certain cases in asylums that have attained the age of eighty or ninety, having passed from fifty to sixty years there.

2. Prognosis of Cure.

The prognosis as to restoration is especially difficult. There is no single certain criterion of incurability. The history, etiology, and pathogenesis, the course, and the frequency of certain symptoms are the points upon which it must rest in the concrete case.[1]

In general, insanity must be regarded, when treatment is begun at the right time, as a curable disease.

In the best institutions the percentage of recoveries varies between 20 and 60 per cent. This variation is dependent on the frequency of degenerate conditions in the population; on the degree of knowledge of physicians which enables them to recognize and treat the disease early; and finally on the enlightenment of the public upon which recognition of the value of admission to an institution for the insane depends.

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[1] Schüle ("Handbook," page 365) regards the process in psychoses as an affection of the psychic centers, which is in general connected with hereditary taint, the physiologic evolutionary periods of life, but especially with the individual development and the intensity of the form of disease in the single case.

In general, certain points for prognosis are obtained from the duration and course, and from single symptoms and causal conditions found in the individual case.

(a) DURATION.—With reference to this point, the statement that the longer the duration the more unfavorable the prognosis is unquestioned. Curability stands practically in inverse proportional relation to the duration of the disease. The greatest number of recoveries (up to 60 per cent.) take place during the early months of the disease. In the second six months only about 25 per cent. recover, while in the course of the second year recoveries reach only from 2 to 5 per cent; nevertheless there is no absolute limit in time of curability. There are, indeed, rare cases due to profound accidental physical diseases (typhoid, cholera, malaria), or to a fall or blow on the head, which have recovered after insanity had lasted many years. Too, during the climacteric sexual psychoses that have lasted for years may disappear.

The foregoing rule is influenced, finally, by external circumstances. If these be unfavorable, then after very short duration a case may become incurable which, under favorable circumstances like those usually found only in asylums for the insane, would have had much greater chance of recovery.

(b) COURSE.—The sudden outbreak of a psychosis allows a more favorable prognosis in general than slow development under the constant influence of injurious conditions. In the first case the course is stormier, more acute, and does not permit persistence and psychic valuation of isolated symptoms; in the second case there is a gradual abnormal transformation of the whole personality, with fatal tendency to systematization of the developing delusions. At least in such a case a chronic course is to be expected with certainty.

With the subsidence of a chronic psychosis the rule is quite the contrary. In such a case sudden recovery is merely, as a rule, an intermission which will be soon followed by a recurrence of the disease; gradual lysis, with more and more marked remission, is the termination to be desired. In the details of its course the more a disease-picture presents the character of a curable, benign psychosis (psychoneurosis), the better is the prognosis. Progressive evolution of groups of symptoms which become more and more severe—such as those characteristic of insanity developed out of the neuroses, primary occurrence of systematized delusions, a protean or marked periodic course in the recurrence of the series, and distinctly marked attacks—points to psychic degeneration and is, in general, of bad omen. A certain variability of symptoms, if it be not protean or

periodic, permits a more favorable prognosis than persistent symptoms, especially hallucinations and delusions with elaboration into a systematized delusional state.

(c) ETIOLOGY.—With reference to prognosis, it is of the greatest importance whether the psychosis depend upon an unfavorable accidental causal moment or whether it depend upon a taint of the whole constitution of hereditary or other origin.

If insanity arise out of such a taint; if it stand in pathogenic relation with an originally abnormal development and formation of character; if it be only or merely a pathologic intensification of anomalies of character; if it present a progressive development of psychopathic symptoms, which at first were but neurotic and elementary, to more severe conditions, then the prognosis is especially bad, and the more so if the outbreak were not sudden, but simply the unnoticed development of taint and abnormal mental peculiarity.

The question of heredity, which often is too much generalized in prognosis, must be regarded from this standpoint.[1]

If the hereditary factor is limited to a simple disposition, which before the outbreak of the disease did not manifest itself clinically by neurotic or psychic anomalies,—in other words, if the brain be simply a *locus minoris* without other signs of disturbance of development or functional degeneration,—then the prognosis is really more favorable than in non-hereditary cases. In the cases under consideration accessory injurious influences, it is true, induce disease, but they are without profound injurious influence on the psychic organ, the functions of which are wanting in stability, and after the subsidence of the disturbance it easily regains its usual equilibrium. On the other hand, when accidental causes induce mental disturbance in a burdened individual, the effect is much more profound, and therefore much more difficult to overcome.

It is quite a different matter in cases in which the hereditary factor is revealed in original defect of character, eccentricities, and disproportionate development of psychic energies, and especially by symptoms due to a taint in which the disease forms the last link

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[1] Jung found in hereditary cases 45.5 per cent. of recoveries in males and 46.9 per cent. of recoveries in females, compared with 38.37 per cent. of recoveries in males and 38.5 per cent. in females without hereditary antecedents.

With careful division of hereditary cases into predisposed, tainted, and congenital, I found in the first category 58.4 per cent. of recoveries in males and 57.7 per cent. recoveries in females. In the second category 16.1 per cent. in males and 13.2 per cent. in females; in the last category no recovery in either sex.

in a chain of psychopathic anomalies and symptoms of development. The prognosis in such cases is bad, and in congenital mental disease (original paranoia, moral insanity) it is actually hopeless. If the taint manifest itself in a state of congenital mental weakness, and, if a psychosis develop in such an imbecile, then the prognosis with reference to the restoration of the *status quo ante* is much more unfavorable than in the case of normal individuals. With reference to gravity of prognosis psychoses dependent upon taint follow directly after acquired idiopathic mental disturbances. Insanity due to head injuries, insolation, apoplexy, meningitis, etc., have, for the most part, an unfavorable prognosis. In this class of cases cerebral lues is more favorable. Still, in the majority of such cases, recovery with defect is the result.

The prognosis of sympathetic mental disturbance depends essentially upon whether the sympathetic cause is one which can be removed.

The most favorable psychoses are those due to anemia, menstrual disturbance, and curable affections of the digestive tract and genitals. Psychoses due to heart disease and pulmonary tuberculosis have rather a bad prognosis.

The prognosis of postfebrile insanity varies according to whether it be due to grave cerebral complications or the expression of anemia and states of exhaustion.

Alcoholic insanity permits a favorable prognosis with reference to the single attack; recurrence is naturally very common. The chronic insanity of drinkers is dependent upon grave idiopathic disturbance of the brain, and at best can end only in recovery with defect. In insanity due to sexual exhaustion and onanism recovery is to be expected only in the initial stages, when the mental disturbance is emotional. Insanity of pregnancy, of the puerperium, and of lactation usually ends in recovery.[1]

An outbreak of mental disease in youth is much more favorable than one occurring in very advanced years. Often in the latter case the decision depends upon the presence of signs of senile involution of the brain.

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[1] Schmidt found in his experience the percentage of recoveries to be 36.2 per cent.; Holm, 40 per cent.; Ripping, 42.8 per cent.; Lübben, 63.4 per cent.; Reid, 71.5 per cent.; Macdonald, 81 per cent.

Schmidt's cases of insanity of pregnancy gave 35.3 per cent. of recoveries, those of the puerperium, 39.3 per cent., and those of lactation, 31.7. Under all circumstances mania is more favorable than melancholia. These figures apply only to severe cases treated in asylums.

The psychoses of childhood, on account of the hereditary taint or the organic causes so common in such cases, have rather an unfavorable prognosis, and besides they endanger the further development of the mind. Psychoses arising during the physiologic periods of puberty and the climacteric allow a favorable prognosis only when they are based upon simple predisposition and not upon a taint. Insanity based upon an hysteric or other neurotic foundation is only favorable when it presents an intercurrent and emotional character. If it be merely a developmental stage in the course of a neuropsychosis, then it is of bad omen.

A prognosis cannot be based upon the somatic or psychic cause that induced the disease. Whether a psychic cause produced its effects suddenly or gradually is a circumstance of more importance. A transitory, but violently effective, cause permits a much more favorable prognosis than a psychic cause that has been acting for years and gradually undermining the physical and mental constitution.

Continued trouble, unfulfilled desires and efforts, and strong passions are special causes which slowly, but surely, destroy the mental life. If, in addition, there be material misery, drunkenness, and other vices, then recovery is scarcely to be expected.

Insanity due to psychic contagion, when separation from the infecting surroundings is carried out early, permits a favorable prognosis.

(d) ACCORDING TO SINGLE SYMPTOMS.—*1. Psychic Symptoms.*—Profound clouding of consciousness, if it come on gradually during the course of the disease, indicates a grave form, but sudden and primary occurrence of disturbance of consciousness is more favorable.

Profound mental incoherence, when it is not simultaneous with the height of a psychosis, is unfavorable; if it still continue after the subsidence of the acute stage and after the disappearance of the emotional excitement, then it usually indicates the beginning of secondary dementia. Weakness of memory, especially if it be partial and particularly for recent events, indicates a grave idiopathic disease.

Perversion of feeling and thought, evil inclinations, and eccentricities, occurring in the course of a subsiding psychosis, point to the development of dementia, while, on the other hand, return of former inclinations, habits, ethic feelings, and moral judgment points to an early disappearance of the disease.

Loss of sense of modesty and uncleanliness, if they do not accompany the height of mania, indicate mental decay.

Coprophagy and the eating of disgusting things in general occur only with profound disturbance of consciousness.

Insensibility to heat, cold, and bright sunlight, and absence of the feeling of satisfaction in eating, are bad signs, like anesthesias.

Sexual excitement in young persons is not ominous, but when it occurs in advanced years it is of evil omen.

The formation of new words occurs almost exclusively in incurable forms of insanity. Aphasia points to idiopathic organic disease.

Imperative and impulsive acts are ordinarily manifestations of degenerate psychoses.

The impulse to collect objects of all kinds is of evil omen when it is not a prodrome or symptom of mania.

Delusions are unfavorable symptoms when they are primary and devoid of emotional foundation or have a primordial character and do not change.

When they are desultory and arise as a kind of allegoric explanation, and are symptoms superadded to emotional states, they are not in themselves unfavorable. Grand delusions are of graver prognosis than depressive delusions, and of the latter those due to diminished self-feeling are more favorable than delusions of persecution.

Imperative ideas occur exclusively in tainted individuals.

Hallucinations and illusions are of bad omen when they are stationary and affect several senses.

Illusions are less serious than hallucinations; of the latter, auditory, gustatory, and olfactory are more unfavorable than those of the sense of sight.

2. Physical Symptoms.—Motor disturbances of all kinds have an important and usually bad prognostic significance, for they indicate grave idiopathic diseases. This is especially true of convulsions, paralysis, and disturbances of co-ordination when they are not hysteric.

The disturbances of so-called tetany and catalepsy are less unfavorable.

Tremor may be due to alcoholism, anemia, or nervous excitement, and therefore has not the same ominous significance as other motor disturbances.

Inequality of the pupils and strabismus may be accidental or habitual, and they are to be considered only in connection with other symptoms. Disturbance of speech (stumbling over syllables) was regarded by Esquirol as a sign of fatal termination. It always indicates grave idiopathic disease (paralysis); and grinding the teeth has the same significance.

Expression, appearance, and attitude are very important in prognosis. Muscular relaxation, with the chin falling on the chest, indi-

cates usually a transition to dementia; and the same is true of relaxation of the sphincters, and dribbling of saliva when its secretion is not increased.

From a prognostic point of view, changes in the innervation of the muscles of facial expression are especially valuable. In cases where the insanity will have an unfavorable termination, this is often shown early by the empty, fixed, expressionless glance, and the peculiarly distorted features, dependent upon unequal innervation and contractions.

Sleeplessness and refusal of food, if they are more than transitory, are of evil omen, as are also trophic disturbances (decubitus, othematoma, etc.). This is also true of subnormal or elevated temperature of neurotic origin.

The return of the menses has a critical significance only when the mental disturbance has arisen in connection with their suppression; otherwise their return indicates only an improvement of the general health and is favorable in just that sense; but in many cases it is without significance.

Finally, in connection with mental indications the most important prognostic sign is the weight or rather the state of nutrition of the patient. Nasse did a great service in establishing its prognostic value.

Increase of weight which accompanies or precedes mental improvement, especially if it be rapid, according to Nasse's investigations is a sure sign of convalescence. A slight diminution of body-weight after it has attained a maximum predicates recovery.

When mental improvement takes place without or with only slight increase of body-weight, the cure is doubtful and a relapse is to be expected.

If body-weight increase with no mental improvement, then transition to a state of incurable mental weakness is indicated.

As long as a psychosis remains at its height, it is always accompanied by loss of body-weight. If this loss of weight be great and rapid in spite of sufficient nourishment, it indicates a grave progressive disease of the brain or a complication of the psychosis with a grave general disease like tuberculosis.

3. Prognosis of Recurrence.

With reference to the prognosis of recurrence, in the first place it must be considered that statistics show that, of 100 recoveries in patients discharged from asylums, about 25 per cent. have a recurrence. In the individual case everything depends upon the biologico-

etiologic external circumstances: for example, an accidental case of insanity occurring after typhoid fever without predisposition will scarcely be repeated, while a case of insanity founded on taint, especially if it be hereditary, runs the danger of being repeated as a result of accessory injurious influences of all kinds—indeed, even as a result of physiologic changes at the critical periods of life.

Too, bad social relations, unkind treatment of patients discharged from the asylum, financial difficulties due to disease and absence, too early discharge from the asylum, and return to evil habits (drink, etc.) are often responsible for recurrence. The prevention of recurrence by marriage in the case of recovered female patients, which was found by Dick to be effectual, is contested by other observers.

4. Prognosis of Hereditary Transmission.

Prognosis of hereditary transmission is an especially delicate question which can only be answered in a concrete case, and then only with probability.

The important point for the decision of the question lies, of course, in the pathogenesis of the psychosis the hereditary influence of which is to be feared.

If the psychosis be constitutional and present degenerate foundation and features, then there is great danger of transmission; if, on the other hand, it has been accidentally acquired without any predisposition and has been cured, and also if its symptoms have been benign and followed by recovery without defect, then there is no probability of hereditary influence upon descendants. This influence, however, is possible if conception take place during the course of the psychosis.

With reference to the possibility or probability of hereditary influence upon descendants in cases where there has been taint or mental disease in ancestors, the following should be considered: The worst case is where the father and mother are both tainted and mentally burdened before the conception of the descendants under consideration; and, too, if the mental disturbance itself presented a degenerate character. In such a case as this mental disease in some form or other in the descendants is to be expected almost with certainty. However, the law of atavism might save the individuals if earlier ancestors were healthy.

If only the father or the mother is tainted or diseased, then the question depends essentially upon which parent the individual physically resembles.

Richarz has gone into the question more deeply in an anthropologic sense. He starts out with the fact that sex is not a transmissible peculiarity of parents, but in great degree a form of existence based upon the degree of organization of the descendant, in which the male represents the higher degree. The center of gravity of the procreative process lies in the maternal organism. The influence of the male element lies merely in the excitation of the developmental movement which is imminent in the germ, with also participation in the qualifying peculiarities of the male element, to which, however, sex in nowise belongs. The greater the maternal generative power, the surer will the offspring be a male; and, at the same time, the smaller the qualifying paternal influence, the surer will he resemble the mother. This resemblance is found less in features and bodily form than in the more important points of the color of the skin, the hair, and the iris (Huxley, Virchow): characteristics which are of much more importance with reference to differences of race. Crossed inheritance of these physical peculiarities (son to mother, daughter to father) seems to be the most favorable. Uncrossed sexual inheritance is slightly degenerate. When a descendant resembles neither parent, Richarz, in accord with Morel ("De l'Hérédité Morbide Progressive"), finds that the condition is decidedly degenerate, and that it is often the only explanation for insanity in a family that had previously been intact.

All observers (Esquirol, Baillarger, Jung, and others) agree that insanity in the mother[1] is more dangerous to descendants than insanity in the father. This is in accordance with the natural law and the fact that holds for animals: that the female sex, which predominates, more readily transmits to descendants than does the male sex. For the same reason, as Richarz makes plausible, a daughter, representing the inferior sex, more readily inherits the disease of her parents than does a son; and it is therefore natural that statistically hereditary insanity is 6 per cent. more frequent in women than in men (Jung).

Jung has emphasized the great importance of physical resemblance in reference to the question of inheritance, and he formulated the following rule: "If a descendant inherit the physical *habitus* of his tainted ancestors, then he also inherits their mental constitution; and, if his ancestors become insane, then there is a great probability that the descendant at about the same age and under the influence of similar exciting causes will have an attack of insanity."

Richarz gives the following table of probability of inheritance of mental disease based upon his conclusions:—

I. Mother tainted
1. Daughter who resembles the mother.
2. Son who resembles the mother.
3. Son who resembles the father.
4. Daughter who resembles the father.

[1] Jung (Allgemeiner Zeit. für Psychiatrie) finds that insanity is at least one-third more frequently inherited from the mother than from the father.

II. Father tainted { Endangers 1. Son who resembles the father.
2. Daughter who resembles the father.
3. Daughter who resembles the mother.
4. Son who resembles the mother.

According to this, a daughter who resembles an insane mother is the most predisposed, and a son who resembles his mother, but has an insane father, is least disposed. Complete lack of resemblance as to the physical types of the parents is a sign of degeneration.

The profound significance of these prognostic points with reference to the degeneration of individuals, as well as of nations, is worthy of recognition and consideration. Persons neurotic by heredity, as well as those predisposed to tuberculosis, should abstain from procreation. Unfortunately, it is especially in such individuals that intensified sexual impulse is observed, and this is responsible for the fact that the two curses of humanity—insanity, which destroys one in three hundred; and tuberculosis, which destroys one in three hundred and twenty, of the members of society—increase rather than diminish, in spite of all scientific teaching.

PART FOURTH.

General Diagnosis.

CHAPTER I.

Diagnosis of the Disease.

THE general question whether a person be mentally sound or unsound may be demanded of the physician in court or at the bedside.

In court this question is asked when there is doubt whether mental peculiarities observed are merely the expression of emotion, of passionate excitement, of voluntary self-abandonment to immoral inclinations and impulses, of voluntary deception, or the natural result of an underlying disease of the brain.

The jurist requires a decision on this point in order to be able to decide whether the individual should be punished for any illegal act, declared incapable of exercising civil liberty, or whether it he necessary to deprive him of personal liberty by committing him to an asylum.

At the bedside the question arises whether the psychopathic symptoms present exist in and for themselves—that is to say, are the expression of some brain disease which clinically and traditionally is called insanity—or whether they are merely symptomatic and a part of the manifestations of a general disease (delirium of fever, inanition) or of an intoxication or some other cerebral or nervous disease.

Notwithstanding the fact that the general diagnosis of whether an individual be insane or not is so easy and sure that it can be made in many cases even by the public, there are other cases which demand all the science and skill of the most experienced observers, and in which the question cannot be decided immediately and with certainty. In the first place, the reason for this lies in the fact that in insanity there are no specific symptoms; that those which occur are equivocal and permit a just conclusion only when they are considered and interpreted together.

Even in the domain of physical disease, where exact physical means for diagnosis are at hand, it is often difficult to decide where health changes to disease. How much more difficult must it be, then, in the psychic domain,

where a standard of mental health can only be thought of as ideal; where no individual is exactly like another, and emotions, passions, and variations of feeling, of thought, and of will from the majority of mankind, even errors of the understanding and illusions of the senses, are possible within the limits of physiologic life, and as elementary mental disturbances, are absolutely compatible with the existence of mental clearness and free will.

The difficulties which arise out of the nature of the subject are further increased by the fact that the development of the mental disturbance in question, as well as the previous life-history of the case, remain unknown; or the disturbance has developed unnoticed out of habitual anomalies of character, passions, or vicious and immoral life; by the suspicion of intentional deception or concealment of symptoms on the part of the patient; and, finally, by the fact that the period of observation is too short, and thus symptoms of a disease which is distinctly periodic or not yet fully developed may escape observation.

The following may be given as general rules for psychiatric diagnosis:—

1. Mental diseases are cerebral affections with predominating, but not exclusive, psychic symptoms. Even though the latter are essential for a judgment of the mental condition, still the diagnosis must not depend upon them. Other possible signs of existing cerebral and nervous disease must be investigated; the psychologic diagnosis must be deepened and broadened into a neuropathologic diagnosis. It may even be advisable to put aside at first the equivocal mental symptoms and consider the general question of the existence of a congenital or acquired cerebral or nervous disease. If, along with anatomic and functional signs of degeneration, or of vasomotor and functional sensory disturbances which can be referred to a central cause, there be mental symptoms of equivocal significance (irritability, abnormal emotions, perverse acts, immoral inclinations, and the like), then a proper light is thrown on their significance, and the presumption that they are abnormal (chronic alcoholism; degenerative, moral, epileptic insanity, and the like) becomes almost a certainty.

2. Mental diseases, as Schüle emphasized, are not only diseases of the brain, but at the same time diseases of the personality. The whole earlier personality, especially its origin, must be considered, and the psychologic diagnosis must be enlarged to an anthropologic diagnosis.

The important point for the general, as well as the special, diagnosis of insanity lies unquestionably in the history. The general individuality, with its development, and the former habitual manner of feeling and reaction, are its next subjects of investigation, and in particular the mental constitution, either inherited or congenital.

Inherited tendency, education, and circumstances of life are the factors out of which individuality arises. The importance of the first in forming a judgment as to whether mental peculiarities are abnormal or normal is not slight.

3. Mental diseases are actual diseases. They are accompanied by disturbance of the vegetative life. Most careful physical examination must go hand in hand with mental examination. It is often only by means of the former that we are able to determine whether we have to do with an independent psychosis or a symptomatic disturbance of the psychic functions.

Specially important physical symptoms are disturbance of sleep, of nutrition, of the functions of digestion, and of the intestines, as well as of the secretions. These, however, have a positive value only in the initial stages of insanity. In the final stages they may have quite disappeared, and their absence has no significance.

4. As a disease, insanity has causes. Mental disease in itself is an unusual phenomenon. It must have an efficient cause, whether that be in the powerful influence of predisposition or in the special intensity or cumulation of accidental causes. The psychologic investigation must be widened to include the etiologic and pathogenic factors. The earlier and more clearly pathogenically the symptoms of mental change follow a given cause, the greater is their significance.

The value of the etiologic features of a given case are diminished only apparently by the fact that sometimes no cause can be discovered, and that a preceding depressing cause makes it doubtful whether the following mental change be a physiologic reaction to the cause or a pathologic phenomenon.

When no exciting cause can be found, there is always congenital or acquired predisposition or even congenital disease.

It is precisely in such cases that the history gives light by an investigation of the anthropologic and etiologic factors, since frequently this shows that the equivocal disease-picture is the acme of development of a defective and abnormally predisposed personality which began in childhood. In the second case the question is more difficult, when the mental depression observed may be regarded as the natural reaction to a depressing cause.

The painful emotional state occurring in healthy individuals within physiologic limits, and the commencement of abnormal depression, may have like characteristics.

In such a case, before all other considerations, the course of the disease, exact knowledge of the usual manner of reaction of the individual, and minute consideration of the symptoms in detail are the decisive points.

If the exciting cause be slight; if the effect in the individual be unusually intense and prolonged; if the depression increase with time; if it continue after removal of the primary cause of depression, then the probability is increased that we are dealing with an abnormal state of feeling.

The painful state of feeling that occurs in healthy individuals is not general, and may still be influenced in a certain measure by pleasant impressions, while, on the contrary, abnormal painful depression changes even pleasant feelings into those of an opposite character, and recognizes only variations of intensity. There are, besides, spontaneous intensification of depression to intense fear and anxiety; troubles due to inner mental and organic conditions which are foreign to the emotional states of healthy individuals, or which occur only in obedience to external causes. The abnormally depressed individual also has not infrequently consciousness of the disease that threatens him. He presents disturbance of the sensorium (headache, dizziness, sleeplessness, feeling of inhibition of thought, absence of thought, pressure in the head or in the epigastrium), hyperesthesias, and neuralgias.

Too, nutrition suffers more. In such cases the body-weight falls much more decidedly and quickly than in those affected by physiologic depression.

5. After the symptoms of the disease, the most important element is its course. In general, insanity presents definite types in its course that have been empirically established. If the concrete case correspond with the empiric laws of the course of a given psychosis, then it is certain that the condition is abnormal, and the more if the attacks of the disease occur periodically and are connected with physical conditions which coincide (menses).

But the disease-process, in so far as expressed in symptomatic detail, is one that follows empiric laws, even though our scientific understanding of the laws governing the symptoms and their occurrence in series is often defective. The more distinctly single symptoms show inner connection and foundation, the surer is the conclusion that the process is abnormal.

6. In insanity, as in other diseases, we have to do with life under abnormal conditions. The functions are not totally changed, but the conditions are abnormal under which they manifest themselves; thus it necessarily follows that it is not the altered functions as such, but the reference of them to the abnormal conditions, which is essential. The distinction between an individual mentally sound and an insane person is essentially that in the former the psychic processes are, in general, in relation with the impressions and actual circumstances of the external world, while, on the contrary, in the insane the mental activities arise out of inner organic abnormal conditions.

They are the expression of subjective activities which have no motive, or only an insufficient one in consciousness and the external world. Therefore the content of psychic activities is not decisive, but rather their origin and causation. There is no functional disturbance that occurs in the insane which is not occasionally observed within the limits of mental health.

7. A disease is always a complicated process which is never manifested in a single symptom. This is also true of insanity. The establishment of a disease-picture is only possible synthetically. Any single symptom only becomes valuable and worthy of consideration in connection with other symptoms and their interrelations, with correct combination and interpretation of their disparate manifestations, and with detailed study of their relation in time and their contradictory association.

Analytic study of a case can never lead to the desired result, the more because here any single symptom, even if it be a delusion, is equivocal. This is even still less possible in the case of emotional anomalies, affects, perverse impulses, criminal acts, and immoral tendencies, which can be estimated only in relation to other symptoms and the previous and present personality.

8. Insanity as a disease of the personality requires also an investigation of concrete phenomena singly.

Si duo dicunt idem, non est idem. Here knowledge of the individuality is indispensable. In the mouth of a man highly versed in the natural sciences belief in witches would be very suspicious, as would also belief by an astronomer in the arrest of the movement of the earth; but such ideas in an uneducated person would not seem so remarkable.

9. Insanity as an abnormal phenomenon of life makes a personal examination of the patient in question desirable. Where such an examination is impossible, as in case of an opinion given *in absentia* in case of examination of the mental condition of a person already dead to determine his mental condition at the time he made a will, then important elements for diagnosis are wanting (facial expression, *habitus*, etc.).

Where it is possible to make a personal examination it is of great importance to be able to observe the patient in question under his ordinary circumstances of life; the manner in which he lives, dresses himself, and employs his time may afford important elements, not only in relation to the insanity itself, but even in showing the manner of its origin and manifestation. Conversation with the patient is the basis of a mental diagnosis. It is necessary to know not only what questions to ask, but also how the conversation should be directed. The subject of the examination is not a chemic product, but a changeable human consciousness, which will be greatly influenced by the manner in which the examination is conducted.

The examiner should approach the patient in the simplest possible way, and begin the conversation with the most indifferent affairs, leading him on to speak, without allowing him to divine the ultimate object of the examination. This should never be given the character of a cross-examination. It is best

to begin with the physical condition, occupation, and earlier life history, showing sympathy, and thus gaining the confidence of the patient. Thus the history, desires, plans, state of feeling, intelligence, and tendencies of the patient may be examined. The conversation may then be led to the future; family; social, political, and religious questions; and attention should be directed to determine whether any changes of relation in any direction are present which might give the key to any possible delusion. As a rule, an insane patient, as soon as his delusion is touched upon, reveals it.

During this examination there is time to study the glance, mien, gestures, and attitude, and take in the home and surroundings.

The mental examination is to be followed by a careful investigation of all the bodily organs and functions.

Study of the handwriting of patients is an important help in the examination.

The maxim—*"Le style, c'est l'homme"*—holds good here. In general, it may be said that every principal form of mental disease has certain peculiarities of writing and expression, and that the patient in his writings, where he feels less under observation, gives freer expression to himself, and thus betrays more than in conversation. This is especially true of patients who obstinately refuse to talk because of delusions and imperative voices which command them to be silent. It is also often astonishing that patients who are quite rational in conversation, in their writings, both for themselves and for others, express the most irrational ideas. Writing that is rational does not exclude insanity any more than does rational speech. The writing of insane patients may reveal delusions otherwise concealed; the style may enable a judgment of mental capabilities, and in its outward form permit a conclusion concerning the state of consciousness; and the writing itself may be of importance in determining the existence of the slighter disturbances of co-ordination. Imbeciles write the least. The childish formation of sentences, awkwardness and lack of clearness in diction, indicate a high degree of mental weakness. Since writing gives greater clearness to thought than does speech, it is a very fine test of states of mental weakness (Güntz). Melancholic patients also write little. Here mental pain and inhibition are a hindrance. The monotony of thought reveals itself in the continuous repetition of the same complaints, fears, and self-accusations. The writing does not flow in a stream; it can be seen that the patient overcame his inhibition only spasmodically and was able to express his thoughts only in fragments. Not infrequently the letters themselves are written with a trembling hand.

The maniac writes much with a firm, steady hand, in large letters and rapidly. It is thus a true picture of his accelerated thought, which oftentimes the hand is unable to keep up with; so that words are left out and sentences remain incomplete. If the flight of ideas become greatly intensified, then the handwriting degenerates into an undecipherable chaos of words and fragmentary sentences that run into each other. In his impulse to write the patient writes in all directions on the paper and does not trouble himself about the material which he may have at hand.

Paranoiacs, especially the querulous and erotic, are voluminous writers. In respect to their handwriting, changes in it, curious eccentricities, curves, and the underlining of words and syllables are worthy of remark.

The diction may be faultless, bombastic, or curious, in accordance with the nature of the delusions and the state of consciousness. In such cases the most remarkable peculiarities may be observed. Thus, Marcé speaks of a paranoiac who had a peculiar idea about the number 3, and in writing wrote each letter three times.

The content of the writings of paranoiacs is of great value, since it often reveals delusions which are carefully concealed in conversation.

In many cases the writing of insane patients is decidedly incomprehensible, as the result of employing words in a new sense, transposition of syllables, the addition of senseless syllables, or substitution of hieroglyphic and symbolic signs for letters. In such cases there may be formation of new words or even the creation of a kind of idiom.

The writing of patients belonging to the paralytic group presents special peculiarities. The disturbance of co-ordination finds its graphic expression in handwriting that is indistinct or childish, zigzag or tremulous, and without distinction in shading.

Paragraphia and agraphia are frequently observed, expressed in words improperly written or in the absence of words. The amnesia may be so marked that the patient repeats several times a word written or even complete phrases. The great disturbance of consciousness prevents recognition of these errors.

In addition, while writing, the patient often forgets his real object, so that in the same letter he addresses himself indifferently to several persons. For the same reason it sometimes happens that the patient puts whole extracts from books lying near him into his letters, or that he writes indifferently in several languages, delivers the letter unfinished, and forgets to put the address, the date, or the signature. Too, the outer appearance of a letter, the paper, perhaps found in the sweepings and covered with blots, indicates clearly the great disturbance of consciousness.

Among the symptoms that are of especial importance in the general diagnosis of insanity there are still to be mentioned: the transformation of the personality (character) into a new abnormal personality and the presence of delusions and hallucinations. Diagnosis by the laity is usually limited to consideration of the last two elements.

(a) CHANGE OF CHARACTER.—The fundamental abnormal process of insanity causes changes of the former character; that is to say, of former habits, inclinations, efforts, and opinions—the personality becomes another. This symptom is the more important, because it is an early one and, as a rule, precedes delirium of thought and act.

This pathologic change of character, which may go to the extent of complete transformation in the opposite sense of former opinions and inclinations, becomes still more important when the individual has been surrounded by conditions or influences known as important causes of mental disease.

(b) DELUSIONS are frequent, but by no means absolute, signs of insanity. It would be a great mistake to recognize insanity only when delusions can be demonstrated. The patient may be in an initial stage (emotional), in which delusions are not yet developed, or he may present a form of insanity in which delusions are never formed. Too, the patient may be able to conceal his delusions, and these, even though they be present, are not always present in consciousness. However, when the existence of a false idea is demonstrated, it must be studied in detail in order to determine whether it has the value of an insane delusion.

(c) HALLUCINATIONS—which occur in other cerebral and nervous diseases, in fever, and in intoxication—are not in themselves decisive as to the existence of insanity. The most that they prove is the existence of an abnormal cerebral condition. Their significance as one of the symptoms of a psychosis depends upon the demonstration of the existence of a psychosis. Hallucinations appear in their true light only when they stand in relation to other elementary disturbances (depression, attacks of anxiety, etc.), and in the disturbed state of consciousness are no longer corrected and exercise influence on action.

Suspicion of insanity is always excited if hallucinations are present, especially when they affect several senses.

If the diagnosis has established the general proof of insanity, then the further question arises whether it be an independent mental disease or a symptomatic disturbance of the mental functions.

The circumstances surrounding the origin of insanity, its previous course, and exact physical examination lead to the solution of this question. A possible confusion with typhoid, with an insidious meningitis (especially tuberculous), and with alcoholic intoxication is especially to be kept in mind. In general, the latter condition is easily distinguished; still, it is to be remembered that intoxication in the predisposed may run the course of acute insanity and become the exciting cause of chronic mental disease.

If the difficulties of distinguishing actual insanity from mere symptomatic mental disturbance have been overcome, then the question arises whether it be idiopathic or symptomatic.

Etiology and pathogenesis, with the peculiarities of the disease-picture, furnish certain points of departure. Here, along with the mental disturbance (primary diminution of the mental powers, disturbance of memory, grave disturbances of consciousness, unusual irritability), the physical disturbances (motor, sensory, especially anesthesia, trophic, fever, and subnormal temperature) make the

distinction possible. In general, in the absence of signs of an idiopathic origin of the trouble, when the psychosis can be genetically referred to a peripheral disease (as of the uterus, the alimentary tract, etc.), and it can be shown that the former has arisen in the course of the latter, then the evidence speaks in favor of the trouble being a sympathetic affection. The relation is clearest when the peripheral cause induces the effect periodically (menstrual insanity).

CHAPTER II.

Diagnosis of Cure.

DIAGNOSIS must finally be extended to determine whether, after the disappearance of mental disease, cure has resulted.

The question may arise simply with reference to determining whether a patient is to be discharged from the asylum, and also legally with reference to determining whether a recovered patient shall be reinstated in his rights of citizenship that the disease may have annulled.

The diagnosis of cure is not surrounded by less difficulty than the diagnosis of the existence of the disease; especially in the case of ordinarily weak-minded, defective, tainted individuals is it often scarcely possible to determine what is to be regarded as a residuum of disease and what should be held to be a part of the pre-existing abnormality.

In general, the diagnosis of cure rests upon the negative elements of the disappearance of all symptoms of disease and on the positive element of restoration of the former mental personality with all its peculiarities of character, qualities, faults, and inclinations. To decide the latter question exact knowledge of the former healthy or relatively healthy individual is indispensable, and the judgment of relatives is often surer than that of the physician in the asylum. In deciding whether all the pathologic symptoms have disappeared, careful consideration of the course of the disease and the present state of the patient is necessary. The possibility of simply temporary latency of the disease is to be considered, but especially, too, the concealment of mental symptoms by the patient.

It is still more important to observe whether the mental restoration has taken place parallel with physical recovery, and to determine its relation to the increase of body-weight.

An important criterion of a psychic kind is complete insight of the recovered individual into the mental disease that has passed away. This should appear to him in a completely objective sense; but this criterion has its limit, since there are patients who recover and who have no memory whatever of their disease (transitory insanity) or who are ashamed to make confession about it. *Dissimulation* of pathologic phenomena occurs in the melancholic and paranoiacs, that they may be declared well and discharged or in order to escape the control of a guardian. The self-control and cunning of such patients is sometimes truly astounding.

In such cases careful observation of the course of the disease in both its physical and psychic aspects is the most important point. If this be wanting, then, by kindness and friendship, the confidence of the patient must be gained. He must be led into frank conversation upon all possible topics, and in this way possible affective anomalies and delusions are to be sought. Too, in such cases, study of the handwriting may give valuable hints. Not less important is study of the attitude, the inclinations, and the acts. To experienced observers, peculiarities of dress, conduct, mimic, and gestures become valuable elements in reaching a conclusion.

Appendix.

Outline for the Examination of the Mental Condition.

I. History.

(A) Genealogy and Health of the Family.

Has any member of the family (ancestral, collateral, or descendant) suffered with any nervous or mental disease? In what relative, from what cause, and at what age was the nervous or mental disease observed (cerebral disease, spinal disease, hysteria, hypochondria, epilepsy, chorea, migraine, neurasthenia, psychoneuroses, or degenerative psychic disease)?

Has there ever been suicide, drunkenness, eccentricities or remarkable immorality (crime), arrest of mental development, sudden death with cerebral symptoms, apoplexy, convulsions, deaf-mutism, or malformation in the family, and in what members of it?

Were the parents blood-relations? Were they young or advanced in years at the time of the birth of the individual, or at the time of his conception intoxicated or convalescing from a grave disease like typhoid, or undergoing some depressing cure (mercury), or suffering from the effect of other exhausting influence?

Which of the parents does the descendant resemble physically and mentally? Is there tuberculosis or scrofula in the family?

(B) Health and Constitution of the Individual.

1. Fetal Life.

What was the state of the mother's health during pregnancy (disease, injuries, trouble, excesses)? Was the birth at term or premature? Was there any head injury during birth?

2. Childhood.

Were cerebral attacks, convulsions, observed? Had these any influence upon the physical and mental development? When did the teeth appear? When did the child learn to walk and talk? Was there somnambulism and nocturnal fears? Did the child have children's diseases, especially rickets? What were they, and what were their results? Was the child subject to fear, nervously excitable, and given to outbursts of anger?

3. Puberty.

Was the physical and mental development precocious or retarded, and was the mental capacity good, mediocre, or bad? At what period did the signs of puberty appear? When did the menses begin, and by what physical and mental disturbances were they accompanied (pain, chlorosis, nervous disturbances, mental depression, hypochondria, religious exaltation)?

Did the sexual instinct appear abnormally early or late or not at all, and was it abnormally intensified or perverse? Was it satisfied, and how (onanism)? At the time of pubescence was there a noticeable change of character or an attack of mental disease?

4. Adult Age.

What was the constitution, strong or delicate? Was there tendency to disease and of what organ? Was there actual disease, especially anything like head injuries, acute diseases like typhoid, intermittent fever, cerebral disease like meningitis, chronic disease like chlorosis, diseases of the intestinal tract or of the uterus, and especially constitutional and nervous diseases (lues, spinal irritation, hysteria, hypochondria, epilepsy, etc.)? What were the principal symptoms, their duration, and results? What was the state of the functions of the nervous system? Were there signs of a neuropathic constitution (tendency to delirium and hallucinations while sick, especially with fever; great morbidity in general; unusual reaction to atmospheric, terrestrial, and alimentary influences; idiosyncrasies; lively susceptibility of the vasomotor system to mental influences—paleness, blushing, palpitations, and sensations of precordial oppression; intolerance of alcohol; abnormal states of drunkenness; abnormal excitability of the sensory and sensorial nerves; unusual duration of excitement; intercurrent sensations; intensified reflex excitability; signs of irritable weakness; tendency to convulsions)?

Are there signs of psychopathic constitution (great irritability, moral emotionality, pathologic affects, great mobility of feeling, frequent groundless change of feeling, changing sympathies and antipathies, great excitability of the imagination, great excitability of the will without perseverance)?

What was the general psychic character (yielding or firm; rational ideas of life or eccentricities and exaltations; political, religious bigotry; sociable or unsociable; egotistic or altruistic)?

Is the temperament phlegmatic or excitable, sensitive or ambitious?

The intellect: Harmonious and up to the average or one-sided? (Predominance of imagination with limited understanding; above or below the average? What have been the social relations? Was the patient satisfied with the position in which he grew up? The family relations, especially marital?)

What have been the occupation and manner of life with reference to any injurious influences (excesses; onanism; abuse of alcohol; over-exertion; especially, in the case of women, the menses; with reference to their recurrence, quantity, and any accompanying nervous and mental disturbances)? Has the patient been pregnant? When for the first time, and how often? How rapidly did one birth follow another? What was the state of mental and physical health during pregnancy? Were they terminated at term or prematurely; attended by complications (artificial aid, hemorrhages, etc.) or followed by disease (puerperal)? Did she nurse her children? How often and how long?

5. Causes of the Actual Disease.

Presumable cause of the present disease? When did it begin? Investigation of the functional disturbances which appeared after the causes; relation and manner in which several causes may have produced their effect.

6. Prodromes of the Actual Disease.

Is the present psychosis the first attack, or have there been earlier outbreaks of mental disturbance? If there were, what were their cause, symptoms, course, and termination? Did the present disease manifest itself suddenly or gradually? When and with what prodromes?

(a) Loss of memory, of mental power; mental fatigue, moral inertia with choleric tendency; change of character, immorality?

(b) Painful depression, abnormal sensitiveness, emotional irritability, sadness, fear of becoming insane, disgust of life, absence of pleasure in mental activity?

(c) Expansiveness, loquacity, too busy with affairs, tendency to travel, prodigality in spending money?

(d) Hostile, suspicious, irritable conduct, jealousy, complaint of being despised, of being calumniated or threatened?

(e) How has the patient slept, eaten, and what has been the state of excretion, menstruation? Have there been headache, vertigo, precordial sensations, neuralgia, disturbances of speech? Have there been apoplectiform or epileptiform attacks or attacks of dizziness?

(f) Were these prodromes continuous, remittent, or intermittent? How did one follow another?

II. Present Condition.

(A) Physical Examination.

1. Physical size, weight, state of nutrition, the amount of blood, its composition and distribution, cyanosis, fluxion, local anemia. Age, with especial

reference in youthful individuals as to whether the development of the body corresponds with age; in adults as to whether any signs of old age or decrepitude are due to the age.

2. Form and size of the cranium.[1]

	Male.	Female.
(a) Circumference measurements (taken with a tape measure) in centimeters: Horizontal circumference through the external occipital protuberance and the glabella	55 cm.	53 cm.
Posterior occipital line, from the border of the mastoid process on one side over the external occipital protuberance to a corresponding point on the other side	24 cm.	22 cm.
The anterior frontal line, from the anterior border of the external auditory canal of one side over the glabella to like point on the opposite side	30 cm.	28 cm.
Vertical line, from the root of the zygomatic process of one side over the vertex to a corresponding point on the other side	36 cm.	34 cm.
Longitudinal circumference, from the root of the nose to the external occipital protuberance	35 cm.	33 cm.
The ear-chin line, from the external auditory canal on one side over the point of the chin to a corresponding point on the opposite side	30 cm.	28 cm.
(b) Calliper measurements: Longitudinal diameter, from the root of the nose to the external occipital protuberance	18 cm.	17.5 cm.
Greatest lateral diameter	15 cm.	14 cm.
Diameter between the external auditory canals	12.5 cm.	11.5 cm.
Diameter between the zygomatic processes of the frontal bone	11 cm.	11 cm.
Distance from the auditory meatus to the nasal spine.	12 cm.	11 cm.
Breadth, index: *i.e.*, the product of dividing the longitudinal diameter by the lateral diameter, multiplied by 100	80	70

3. *Signs of degeneration: (a)* Cranial anomalies: Microcephaly, macrocephaly, cephalonia, and hydrocephalus (rhombo-, lepto-, and klino- cephalus).

(b) Eyes: Congenital blindness, retinitis pigmentosa, coloboma iridis, albinism, difference in the pigmentation of the iris, congenital strabismus, obliquity of the opening of the eyelids.

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[1] The average measurements given above are taken from Welker's measurements on the bony skull, modified by Dr. Muhr for the head of the living. In the insane the cranial measurements of most importance are those for determining the relations of size and deformities. Macrocephalic heads, after excluding cephalonia, as well as microcephalic, give rise to the presumption of congenital or early acquired states of imbecility and mental weakness. Deformities of the skull and inequality of development of its two halves seem to predispose to brain diseases. They are remarkably frequent in paranoiacs; not infrequently they are dependent upon rickets. Other traces of rickets should be looked for in the rest of the skeleton.

(c) Nose: Obliquity of the nose, great depth of the root of the nose (cretinism).

(d) Ears: Too small, too large ear; rudimentary lobule or one which loses itself in the surrounding skin; defective differentiation of the helix, antihelix, tragus, and antitragus.

(e) Defective differentiation of the teeth; total or partial absence of the second dentition; abnormal position of the teeth (rickets).

(f) Mouth and palate: Too large or too small a mouth; too high and narrow or too low and wide a palate, or a palate flattened on one side; defect of the palatal tissues—harelip, cleft palate; prominence of the intermaxillary bone.

(g) Skeleton and extremities: Humpback, club-foot, club-hand, unequal size of the hands, supernumerary fingers and toes.

(h) Genitals: Cryptorchy, epi- and hypo- spadiasis, or hermaphroditism; uterus infantilis, bicornis, etc.; phimosis without hypertrophy or lengthening of the foreskin.

(i) The hair: Abnormal growth of hair in women; marked growth of hair over the body.

4. Temperature (thermometer).

5. Pulse: Frequency, quality (slowness or acceleration); sphygmograph.

6. Examination of the functions of the higher sense-organs (ophthalmoscope, etc.).

7. Examination of sensibility: Hyperesthesia, anesthesia, neuralgias (esthesiometer, needle, electric current).

8. Examination of the superficial and deep reflexes.

9. Examination of the motor functions: Facial innervation, mydriasis, inequality of the pupils, reaction of the iris (atropine, calabar), nystagmus, strabismus, paralysis of ocular muscles, ptosis, speech (aphasia, ataxia, paralysis of the tongue), ataxia, tremor, paresis, paralysis of the extremities, or sphincters, catalepsy, hypertension of muscles.

10. Secretory functions: Salivation, perspiration, examination of urine.

11. Trophic condition of the skin, decubitus, othematoma.

12. Physical examination of the organs of the chest and abdomen; in women, determination of the position and functional condition of the uterus.

13. Attitude, glance, mien, gestures.

14. Sleep, appetite.

15. Functions of the sensorium: dizziness; feeling of trouble in the head, of changed weight, or of its circumference as greater or smaller.

(B) Mental Examination.

1. State of feeling, fundamental feeling, change of feeling, state of emotional excitability, manner of reaction to external events, whether increased or diminished. Consideration whether mental impressions or sense-perceptions emphasize mental feelings, and what their quality is.

2. Thought: Whether slowed or increased in rapidity; whether interrupted; flight of ideas; incoherence; imperative ideas.

3. Consciousness: Whether troubled and in what direction; consciousness of time, place, of personality.

4. Memory: Whether intensified or diminished, partially (for late events) or as a whole.

5. Sense-perceptions: Whether intensified or slow, distorted or absent.

6. State of thought: Manner in which logical processes are carried out, capacity for mental work in general, especially with reference to intensity (clearness) and duration (rapid exhaustion).

7. State of ethic consciousness: Presence and valuation of moral ideas and judgments.

8. State of the will: Whether intensified impulse to activity or diminished (abulia).

9. Presence of delusions and hallucinations.

PART FIFTH.

General Therapy.

CHAPTER I.

General Considerations.

THE fact that insanity is a cerebral disease and curable when early recognized and properly treated has only been realized of late. Even as late as the preceding century ignorance and cruelty incarcerated the troublesome insane in prisons and houses of detention along with criminals and vagabonds or allowed them to perish in filth and misery. It was scarcely a greater disgrace to be a criminal than to be insane.

It was reserved for modern times, after many errors concerning the nature of insanity, and after long and unprofitable discussion as to whether the soul or the brain was diseased, or both, to reach more correct views concerning the nature and treatment of this condition. The scientific recognition of insanity as a disease of the brain permitted the humane conviction that so great a human misfortune was worthy of the protection and help of society, and that society should not simply incarcerate the most unfortunate of its members. The first result of these scientific and humanitarian efforts was the institution for the insane. With its origin begins the rational therapy of insanity.

Therapy as we practice it to-day does not trouble itself in any way about the impractical metaphysical question whether, above the brain, there is a special soul or whether the therapy should be exclusively physical or mental. Recognition of the fact that all mental manifestations are functions of the brain leads us to attempt to affect the abnormal mental condition by means of psychic influence, in awakening feeling, thought, and will; just as the fact that insanity depends upon anatomic processes in the brain justifies an attempt to overcome the disturbance of cerebral functions by physical and medical measures.

Thus the need of physical and mental treatment, and the necessity of their combination, seem to be the fundamental principle of the therapy of insanity.

That this may be fulfilled it is necessary thoroughly to investigate the disease, the personality in all its present and past relations, the character, the inclinations, and the habits of life, as the basis of a mental therapy, which cannot be thought of except as individualized; and this must be completed

by the previous history of the physical condition, former diseases, and pathologic disposition, and the circumstances and causes of the present disease, with its course and its actual manifestations.

There must next be a clear understanding of the etiology and character of the actual disease; whether it is idiopathic, and what changes in the brain may lie at its foundation; or whether it be sympathetic, and what general disturbances of nutrition or local affections of the vegetative organs influence it.

If an anatomic diagnosis (hyperemia, anemia, inflammation, etc.) is not possible, then at least a functional diagnosis should be made, and all the functional disturbances present should be placed in a clear light.

Diagnosis of the so-called *forms* of disturbance has at least clinical value, though it cannot bear upon therapy.

Psychiatry has never anything to do with forms of disease, but always and only with the abnormal individual. In contrast with the majority of diseases of the vegetative organs, in which the pathologico-anatomic process and often the physical constitution must be taken into consideration, psychiatry individualizes strictly.

The important point of therapy lies in the history of pathogenesis and the etiology of the individual case. In the domain of psychiatry special methods of cure and fixed systems of treatment are only applied by slaves of routine and charlatans.

All the interest lies in individualizing the treatment of the insane person, and also all the difficulty of therapy, especially when this is purely mental. Since insanity is, for the most part, chronic and continues months and even years, we have ample time to investigate the circumstances and nature of the case, and there is no need to hurry in our medical interference. In the rare cases in which insanity occurs acutely and runs a rapid course, active therapy has but little effect upon the typic course of the disease-picture. Even when the concrete case is pathogenically and clinically clear, active therapy has but a limited application. Very rarely can the diagnosis become anatomic, and even when this is possible it is a question whether, with the means we have, we can affect the progress of the cerebral process.

Thus it happens that the task of the alienist is essentially to overcome causal and complicating disturbances in other organs; to improve the circulation, nutrition, and excitability of the diseased brain by dietetic and appropriate physical measures; and on the psychic side, by regulating rest and activity and exciting feeling, thought, and will attempt to influence favorably the diseased brain. At the same time he should seek to overcome certain sympathetic elementary disturbances, such as sleeplessness, refusal of food, hallucinations, etc., which are troublesome or dangerous.

If our therapeutic powers at the height of the disease are confined within narrow limits, still psychiatry has before it a noble work in teaching and practicing the prophylaxis of such diseases.

CHAPTER II.

Prophylaxis of Insanity.

THE etiology of insanity reveals the injurious influences out of which insanity develops. Many of these are avoidable. It lies with society as well as the individual to avoid the most potent of these causes, among which may be mentioned hereditary transmission and sexual and alcoholic excesses.

Frequently the physician is in a position to save individuals from threatened disease who have inherited from their tainted parents a predisposition to insanity; but for this he must have a psychiatric education.

In this sense the task of prophylaxis is worthy and productive, for predisposition is not yet disease, and it is still possible by weakening it and creating greater power of resistance to injurious influences, or, by avoiding the latter, to prevent the misfortune. In the education and treatment of such neuropathic or otherwise tainted children, the following points are to be considered:—

Hygiene must begin while the child is still at its mother's breast.

Such children should not be artificially nurtured; nor should they be nursed by a mother whose neuropathic and anemic condition affords bad nourishment. When it is possible the child should be nursed by a woman mentally and physically healthy, at least until the end of the ninth month.

Too warm rooms should not be allowed nor too warm clothing. The temperature of the bath should be 26° R. (90.5° F.), and after a few months it should be lowered to 23° R. (83.25° F.).

During the dangerous period of the first dentition all hygienic measures should be very strictly enforced in order to avoid as far as possible brain hyperemia and convulsions, which at this time are so frequent and dangerous.

These children should be fortified as soon as possible by cold baths and life in the open air. The nourishment should be fortifying and not exciting, with avoidance of coffee, tea, and alcohol.

Attention to the development of feeling and character cannot begin too early. The children should be early accustomed to obedi-

ence, and their morals should be strengthened, while passions and sensitiveness should be repressed, and calm and self-control under the varying events of life should be inculcated.

The majority of tainted children show abnormal intellectual development: either it is precocious, in which case it should be restrained, or it is retarded, and then patience is necessary. All cerebral strain should be avoided. Such children should be sent to school late, since mental strain is not good for them. At the proper time a simple or technical occupation should be chosen for them, thus avoiding the dangers of a college training and later those of a sedentary life with too much mental strain.

If the parents be perverse, hypochondriac, or hysteric, it is better to educate the child away from home in order to avoid the danger of defective education or transference of the mental infirmities of the parents by imitation. Education in boarding-schools is not appropriate for such children for various reasons. The best education for them is that obtainable in the home of a teacher or a pastor.

Special care must be given to any possible aberrations of the sexual instinct, which in such predisposed individuals often appears early and is excessive; everything that tends to development of the sexual sphere must be carefully kept from influencing the child.

Tainted individuals require special medical attention during the period of puberty, which is in itself so dangerous, as are in general all the physiologic phases of life. The slightest physical disease occurring at this time may complete the chain of etiologic elements and cause the outbreak of insanity. All such diseases (chlorosis, etc.) demand the most careful investigation and energetic treatment.

On the mental side, the reading of novels of all kinds and too lively and enthusiastic cultivation of religion are especially dangerous. In males early marriage diminishes the danger of disease. In females marriage is advantageous only after full physical maturity; otherwise there is the danger that pregnancy and the puerperal period may be associated with an undeveloped weak body, and thus induce insanity. Nursing, even when it is permissible, should be carefully watched, and it should never be continued longer than three months. The dietetic and medical treatment during the puerperal state must be fortifying.

During the period of mature life the maintenance of equilibrium of the mental functions would be favored by the choice of an appropriate occupation, not too exciting, which avoids the influence of changes of fortune, the stock exchange, or a business life. At the same time a manner of life in conformity with Nature must be

followed, avoiding the use of alcohol and taking into account the functions of the digestive organs.

In many cases the accomplishment of these requirements will prevent the development of mental disease in those predisposed.

CHAPTER III.

Treatment in the Initial Stages of Insanity.

INSANITY seldom comes like a thunderbolt out of a clear sky. For the most part, it develops slowly in the course of months or years. This is the important period in which to overcome the germinating misfortune. If the physician be an alienist he clearly recognizes the commencing insanity, when the inexperienced sees only physiologic depression and disappointed love, or chlorosis, hysteria, hypochondria, nervous weakness, excited nerves, or other commonly diagnosticated states.

Unfortunately very frequently the uncertainty of the physician in psychiatric matters allows this stage to pass unnoticed and untreated, and only the so-called sudden outbreak of the disease opens his eyes.

When fortunately the disease is recognized early in its incipiency, in a great number of cases it is still possible to prevent the catastrophe.

The first conditions of successful treatment are the recognition of the causes and their removal. Both psychic and physical therapeutics have, under such circumstances, a wide field of application. In one case, perhaps, it is unfortunate household conditions or overwork; in another, anemia, disturbances of menstruation, uterine disease, catarrh of the stomach, etc., that must be overcome. It is a matter of tact and medical diagnosis to do the proper thing. In general the following indications may be laid down:—

1. Cessation of occupation. The patient must give up all strain. Usually the best effect is derived from a pleasant sojourn in the country with acquaintances and relatives or from travel. Long journeys must be avoided, as well as noisy cities and gay watering-places. Change of surroundings is even more necessary if local conditions in the family or social relations have induced or favored the occurrence of the disease.

2. Avoidance of all weakening influences. Insanity is accompanied by profound disturbances of nutrition, and induces them.

3. Fortifying, but unirritating, nourishment. Alcohol, as well as strong cigars, should be avoided.

4. Regulation of the secretions, especially daily attention to the bowels. Drastic cathartics should not be prescribed, but enemas, aloes, rhubarb, podophyllin, and salines with dietetic measures (cream of tartar, grapes, wheys, etc.).

5. Attention to the cerebral functions in general, especially to sleep; and any possible disturbances of the cerebral circulation must be overcome. Sleeplessness may be overcome by baths, wet packs, amyl hydrate, sulphonal, or trional, which may be temporarily employed. Opiates alone or in combination with quinine or digitalis, with laurel-water or bromine salts, may, according to circumstances, be useful.

The disturbances of the circulation that occur at this time are, for the most part, hyperemias due to diminished vasomotor innervation. They demand a tonic *régime*, and they should be treated with cold packs, icebags, dry cupping, or sinapisms to the back of the neck, lukewarm baths (especially where the heart's action is excited) up to 25° R. (88° F.), and hand- and foot- baths.

6. The physician should be experienced in the treatment of mental cases and possess the confidence and obedience of the patient. He should know how to distract and amuse him. The conduct of those surrounding the patient should be known and watched (excellent suggestions are found in articles by Schröter and Hecker). The patient should not be subjected either to moralizing or criticism.

Logical dialectic opposition to his erroneous ideas is quite as much to be avoided as acquiescence in them. Such efforts are only harmful in that they irritate, embitter, and intensify ideas that depend upon a brain disease. In a word, the patient should be left at rest, and he should be opposed only when he is intractable to treatment, and even then one should proceed quietly and kindly, never with cunning. The patient should never be left to himself.

7. In case the insanity begins as melancholia and with symptoms of mental hyperesthesia, with or without precordial anxiety, opium is an excellent medicine the value of which cannot be over-estimated.

In the majority of cases this excellent advice remains nothing more than a pious wish. If the physician has recognized the disease too late, he finds himself without the power to act, or he avails himself of certain obsolete prescribed methods of treatment which are actually harmful and which Erlenmeyer has condemned as the result of wide experience. The patient is treated, or rather maltreated, by a system of privation, mild diet, bleeding, purgatives, derivatives, etc.; or he is sent to a cold-water cure, where he shivers and is mercilessly douched, and his strength reduced; or he is subjected to a treatment by tartar emetic or psychic or mental shock; or, again, an effort is made to distract him, and the excited or depressed patient in need of rest is made to travel, taken to theaters and concerts, or forced into society. Here should

be mentioned also the modern benumbing treatment with chloral and sulphonal, used by so many ignorant physicians, even to the extreme of poisoning the patient.

Finally the patient becomes maniacal, stupid, or obstinate, and at last private treatment is recognized as no longer efficient, and the asylum is thought of, where the patient arrives frequently enough in an incurable condition.

Thus the fate of the unfortunate insane is sealed when they finally reach the hands of the alienist, their disease having become incurable as the result of ignorance of physicians and the fatal prejudice against asylums.[1]

Decision of the question at the right time whether and when private treatment is no longer useful and asylum treatment is necessary is of the greatest importance.

CHAPTER IV.

The Hospital for the Insane.

FRIGHTFUL for the laity, the institution for the insane is, in the opinion of the alienist, the most important means of cure of insanity. It is only there that the patient finds effectual protection against dangers, especially suicide. Here he can act as he desires without moralizing, without correction or teaching; and he finds care and benevolence and a greater amount of freedom than could possibly be allowed him in the family, with every curative means at hand, and possibility of amusement and distraction in so far as he is capable of them.

Of course, he must submit to the authority of the physician and the rules of the institution, but as soon as he comes to himself he

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[1] Neumann very well says ("Psychiatrie," page 194): "A great number of patients whose admission to asylums is demanded are already actually lost. The fault lies partly with the family and partly with the physician. The family is long in reaching a conclusion that the patient is really ill, and the physician requires a long time to reach the conclusion that the patient is insane; and then the two together require a long time before they decide that an alienist is necessary.

"The first period of this delay is used to trouble and irritate the patient with distraction, persuasion, advice, criticism, etc. During the second period the irritation is combated by bleeding, cathartics, stimulation of the skin, and artificial induction of suppuration; during the third period both parties wonder why the means employed have produced no result. Finally the alienist arrives, to find the strength of the patient exhausted, his digestion destroyed, mental excitement at an acme, or in the deepest melancholy, often even with the insane condition bordering upon incoherence. At this point the alienist is asked to help the patient."

recognizes the benevolent spirit that animates it all. Protection against dangers and the powerful mental and physical means of cure found in a hospital are the advantages which the latter has over private treatment, which has to contend with the resistance of the patient, the ignorance of the relatives, and the absence of proper space and other means.

But the hospital for the insane is not infrequently a direct means of cure, in that the transference of the patient to other and well-adapted surroundings fulfills the causal indication and removes the abnormal influence of excesses, occupation, or unfavorable circumstances of family life.

In general, patients have only pleasant impressions of the asylum; and, as a rule, those that recover remember with gratitude the asylum to which they owe their cure. Statistics[1] clearly show that, the earlier the patient enters the asylum, the greater is the probability of recovery.

Unfortunately there are many traditional prejudices against the early employment of the asylum as a means of cure. The laity think that patients must become ripe for the asylum—*i.e.*, incurable; and thus it happens that the asylums, as Maudsley cleverly expresses it, are rather burying grounds for ruined minds than asylums for brain diseases. It is thought that the patient, by living together with other patients, can only become worse. Experience teaches the contrary. Patients have their attention directed to themselves by the treatment which they see others have, and thus to their own condition, and the example of others incites them to order and obedience.

Naturally there must be proper separation of patients according to education and mental peculiarities, as is carried out in every institution.

However, it is not every patient that requires admission to an asylum. As long as the public regards insanity as a disgrace and sojourn in an institution has a detrimental effect in the eyes of the world upon the recovered patient, commitment to an institution for the insane should be carried out only after mature consideration of the necessity. Besides, there are not enough asylums to accommodate all the insane.

The fundamental principle upon which the decision should depend whether admission to the asylum be necessary is the possibility of cure. If the conditions at home be unfavorable or are the cause of the disease; if the physician be inexperienced and other circumstances be unfavorable for mental treatment; or if means be limited, then the asylum is necessary.

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[1] According to Jensen ("Irrenfreund," 1877, 99), in Allenberg, of 155 patients of commercial occupations, only 16.1 per cent. recover, while, of 206 domestics, 56.2 per cent. recover. The former were admitted to the horrible asylum only after all other means had been exhausted, while the latter, since they had neither money nor home, were admitted at once.

If the conditions are favorable, then the asylum becomes unnecessary; but at least it seems always best to remove the patient from his ordinary surroundings.

A second point is the *danger* of the patient for himself and others. Watching under circumstances of private care does not sufficiently protect against accidents.

A third point is the resistance of the patient to care, the impossibility of carrying out a course of treatment, and the refusal of food.

Finally, much depends upon the nature of the disease itself. The institution for the insane should be used only for chronic cases. The care, administration, and organization of an asylum are unnecessary for cases of insanity that run their course in a few days or weeks. In such cases, if care at home is not sufficient, care in an ordinary hospital suffices. Every city should have a hospital arranged for the reception of acute cases (delirium tremens, epileptic delirium, etc.). Among chronic cases that should be received only in an asylum for the insane are to be enumerated:—

Melancholics with pronounced *tædium vitæ* or destructive impulses and those who refuse food, on account of the impossibility of overcoming in private treatment the consequent dangers.

Maniacal and furious patients require an institution on account of the isolation they need and their dangerousness; and the same is true of epileptics subject to frequent outbreaks of excitement, of paranoiacs who have dangerous delusions, and paralytics in the initial stages of their malady. Commitment to an institution in the cases of hypochondriac and hysteric trouble and also in cases of reasoning insanity is to be avoided as far as possible, especially when they are tainted, irritable, suspicious, and subject to prejudice and ideas of persecution. Quiet secondary dements, and paralytics in the final stages of their disease, as well as drunkards and the criminal insane, have no place in an asylum.

Admission to an institution for the insane is safeguarded by legal measures, which must be fulfilled in order to prevent the misuse of the institution, and especially to guard normal individuals from unjustifiable commitment. It is sufficient if an official physician certifies to the existence of the disease and the necessity for commitment, and that finally the admission of the patient be brought to the knowledge of the asylum authorities, as well as to the proper judicial authorities. If the conditions of admission be made too difficult, then the utility of the institution, which already has so many prejudices to fight against, suffers decidedly.

If commitment be necessary, this should then be quietly told to the patient openly, and he should not be deceived with talk about making a business trip or visiting a watering-place or relatives. In the most favorable case such deception keeps the patient from gaining an idea of his real position, and frequently enough embitters him when, discovering the deception, he awakes with unfriendly feelings toward the institution and his relatives.

CHAPTER V.

Treatment of the Fully Developed Disease.

I. Somatic Therapy by Physical and Chemic Means.

The fundamental principles are: *(a)* Clear understanding of the origin and nature of the physical changes lying at the foundation of insanity. *(b)* Avoidance of all measures that may weaken the organism of the insane patient.

The notion that insane patients require larger doses of medicine than normal individuals should be regarded as an old prejudice. It is only in rare cases, and especially with reference to narcotics, that the same dose has a different effect in the same patient when he is quiet or in an excited state. Besides, the greater tolerance is only apparent, since the patient does not show or notice the unpleasant effect of the medicine; he does not, however, react differently to the medicine than a healthy person.

With reference to extracerebral diseases, conditions so important etiologically and therapeutically, the general pathology and therapy of physical diseases must be consulted. He who would understand and treat mental cases must have the whole of medical knowledge at his command. The diagnostic and therapeutic difficulties that must here be met are scarcely less than in diseases of children. Thorough knowledge of neuropathology and gynecology is especially valuable; medical interference in the latter sense must, however, be undertaken with foresight and tact. Very properly, Ripping warns against too much interference, and Schüle against reckless interference. In general, exploratory or therapeutic measures are to be undertaken only when the patients have sufficient insight into their condition, or where interference is demanded on account of danger to life or health (hemorrhages, profuse discharges).

The remedies at hand for directly treating psychopathic conditions are few. The principal thing is to obtain correct indications.

1. Means to Prevent the Fluxion of Blood to the Brain.

(a) By Diminishing the Quantity of Blood—Bleeding.

Formerly bleeding was much abused on the theory *a priori* that insanity depended upon inflammation.

The time is long past when a state of cerebral irritation was regarded only as a hyperemia or inflammation of the brain, and resort was had immediately to the lancet when mania was diagnosticated or a fever was attended by delirium. The fact that insanity not infrequently occurs directly after loss of blood, or arises out of a state of inanition, caused care to be exercised in the application of bleeding.

To-day the use of venesection in insane patients is practically proscribed; and a thousand facts of experience—which show that, after bleeding of melancholics and maniacs, increase of excitement or states of stuporous exhaustion

followed, and that scarcely a single case was improved—justify this proscription. The more favorable results of psychiatry to-day rest, at any rate, less upon the discovery and application of new remedies than upon the abandonment of weakening measures, among which, next to purgatives, are to be mentioned tartar emetic, blisters, moxas, vesicatory salves, and general bleedings.

As a rule, insanity arises out of weakening influences, with progressive loss of body-weight, and leads, as a result of intensified brain activity, to sleeplessness and insufficient nutrition, to inanition and poverty of the blood, the clear expression of which is mental exhaustion, which usually follows states of severe mental excitement.

To be sure, we frequently have in the insane manifestations of cerebral hyperemia; this is not the result of plethora, but of weakness—neuroparalytic condition of the vasomotor nerves.

It is here evident that the transitory depletion due to venesection is practically worthless when the impoverishment of the blood thus induced can be overcome only slowly or not at all; and thus brings the danger of a transformation of a state of brain exhaustion, reparable in itself, into a condition of brain atrophy. In those rare cases in which the circumstances make bleeding seem necessary, as in the beginning of acute delirium, in insanity due to suppression of the menses, or in certain cases of climacteric insanity, leeches applied behind the ear or to the mucous membrane of the nose, or cups applied to the back of the neck meet the symptomatic indication. In general, we have every reason to treat the insane very cautiously by means of venesection.

(b) To Diminish the Activity of the Heart.

For this, digitalis should first be mentioned (in the form of the infusion or tincture). Its cumulative effect calls for care in its administration. Acute catarrhal affections of the stomach and states of intense sexual excitement contra-indicate its continued use in large doses. Sodium nitrate, small doses of morphine, and laurel-water aid the effect of digitalis. Cold compresses applied over the heart quiet the heart's action, as do also cold wet sheets and the reduction of temperature by cool baths (21° to 16° R., 80° to 68° F.).

(c) By Dilating the Peripheral Vessels.

This method is especially appropriate for continued hyperemias (especially venous) of the brain. Besides lukewarm baths, rubbing with damp sheets, wet packs, and wet bandages to the legs are useful. The indication may also be met by the action of salines, mineral

waters containing Glauber's salts, Carlsbad salts, aloes, rhubarb, and cascara. Abundant depletion through the skin may be effected by dry cups.

(d) By Contracting the Cerebral Vessels.

HYDROTHERAPY.—Contraction of the cerebral vessels may be obtained reflexly by cold compresses or ice-packs applied directly to the head or along the vessels of the neck.

IRRITATION OF THE SKIN.—Heidenhain, by sensory irritation of the skin, obtained contraction of all the vessels of the body reflexly through the vascular center in the medulla oblongata. Schüller, by means of sinapisms, induced at first dilatation and then lasting contraction of the vessels of the pia mater. This way of limiting the flow of blood to the brain is especially suitable for overcoming venous hyperemia, the more since it accelerates the circulation at the same time, and thus facilitates the removal of waste-products and increases oxidation in the cerebral tissue. For this, perhaps, general mustard-baths or mustard foot-baths recommend themselves, and also large sinapisms to the surface of the body.

DRUGS.—The effect to contract the blood-vessels is ascribed to nicotine, hyoscyamus, nux vomica, belladonna, quinine, lead, caffeine, bromides, opium, and morphine in small doses, as well as to ergot and its preparations.

Of all these remedies ergot, in infusion, or better in the form of the aqueous extract, and ergotine prepared in the manner of Bonjean, Wernich, or Bombelon, which may be employed subcutaneously, is the most useful.

Congestive states of excitement (simple mania, grave mania, mania of paralytics, certain stages of acute delirium, transitory mania) indicate the use of ergotine. Schröder Van der Kolk and Van Andel employed it to meet such indications. Schlangenhausen observed relatively good results in states of excitement of menstrual origin. He gave the aqueous extract up to 0.5 or 1.0 gram a day. The dose of ergotine (Bonjean, Wernich) subcutaneously is about the same, once or twice daily.

2. MEANS OF INCREASING THE FLOW OF BLOOD TO THE BRAIN.

(a) By Increasing the Heart's Action.

Alcohol and analeptics have this direct effect. Since alcoholics at the same time increase the nutrition of the brain and promote sleep, and also retard retrograde metabolism, they find properly wide

application in functional states of mental weakness and states of exhaustion.

In ordinary cases, and when continued increase in the flow of blood to the brain is necessary, good old wine, beer, and warm alcoholic drinks, like grog and punch, are efficient. When the heart's action is weak and the circulation depressed, tea, coffee, brandy with eggs, and ethyl alcohol are useful. In collapse and threatened syncope subcutaneous injection of sulphuric ether or camphor (1 to 10 of olive-oil) have an excellent effect.

(b) By Dilating the Blood-vessels.

HYDROTHERAPY.—Warm applications to the head in caps filled with warm water, cold brief rubbings, rain-baths for fifteen to forty-five seconds; cool half-baths with forced douches for from four to five minutes. (Winternitz.)

DRUGS.—A dilating effect on the vessels is attributed to ether, opium, and morphine in small doses, but especially to amyl nitrite, which at the same time has a powerful exciting influence on the heart's action. It is effectual only in inhalation, not by the stomach.

(c) By Facilitating the Flow of Blood to the Brain.

This indication is most simply fulfilled by rest in bed with the head low—an excellent means in all conditions depending upon inanition, which brings quiet often more quickly than narcotics. In agitated and anxious patients the fulfillment of this indication without restraint is difficult. With patience, however, the object is often attained, and the patient becomes quiet and obedient. An iron bedstead without pillows facilitates the attainment of this object.

3. MEANS OF CALMING EXCITEMENT AND EXCITABILITY.

(a) General Calmatives.

1. Narcotics.

Narcotics very properly play an important part in the therapy of the psychoses, in that they overcome mental excitement and hyperesthesia and induce sleep.

OPIUM.—Of these remedies, opium in its various forms (opium, laudanum, aqueous extract of opium) is one of the most important.

The best form of administration is to give the aqueous extract subcutaneously (1 to 20), and also in the form of suppository.

The internal administration is less to be commended, but, when it becomes necessary, the aqueous extract of opium should be given with tonics or Spanish wine.

The effects of opium are:—

1. Quieting and diminishing mental hyperesthesia and precordial distress. In this way it often at the same time has an hypnotic influence.

2. It stimulates the vasomotor nerves, and thus induces vascular contraction.

3. It has a trophic effect on the central nervous system and improves nutrition.

Its effect to cause constipation and lessen secretions disappears with continued use. Its power to paralyze the heart and induce venous hyperemia of the brain and lungs is seen in poisoning with suicidal intent, but this is never observed after ordinary therapeutic doses.

No injurious effects of treatment by opium in the insane are observed when there are indications for it. Even fluxionary cerebral states, if they be of a neuroparalytic nature, do not contra-indicate the use of opium. On the other hand, it is injurious in all conditions of venous hyperemia.

Anemic, hysteric, and hypochondriac patients react with special intensity to opiates, but there is seldom such an idiosyncrasy that the treatment must be suspended.

As a local effect of the subcutaneous use of opium, abscesses are not infrequent, but they heal with surprising rapidity (local trophic effects of opium?).

Opium in cases of initial melancholia is of inestimable worth. In such cases it has a direct effect to overcome mental hyperesthesia, and it is especially useful when there are imperative ideas and precordial distress. Too, at the height of melancholia, if it be active, with violent precordial distress, opium is a direct curative remedy.

Its effect in the acute alcoholic psychoses (melancholia, mania, insanity of persecution) and delirium tremens is excellent; and finally it is useful in cases where mania is diminishing and mental hyperesthesia is still present, and also in cases of irritable furious mania accompanied by angry outbreaks.

In all other forms of mania, as well as in passive melancholia, it seems to be without effect, if not actually injurious.

Opium may be administered internally and subcutaneously. For internal use, powdered opium, laudanum, and the aqueous extract are appropriate, but for subcutaneous administration only the latter is to be recommended.

The solution of the aqueous extract is much more stable if a small amount of glycerin is added. This is also true of solutions of morphine. Too, the solution should be renewed often and frequently filtered. With these precautions, abscesses at the seat of injection need scarcely be considered. The injection is rather painful. The quieting and anesthetic mental effect of opium is obtained as soon as average doses of from 0.1 to 0.2 gram, twice daily, are attained. Ordinarily this is sufficient. Sometimes, however, the dose must be increased to 0.5 gram twice daily. When the height of the disease has been passed, the dose should be gradually diminished. It administration should never be suddenly interrupted. It is easy to overcome the habit that has been established. Manifestations like those of morphinism are never observed; at most, nothing more than lassitude and mental inertia. Minimum and widely separated doses are useless in the treatment with opium. The initial dose should be 0.03 gram, twice daily, and it should be increased as rapidly as possible.

MORPHINE.—Morphine in general has the effect of opium, but not its trophic influence; so that in all cases where choice can be made between the two, and the state of nutrition is much reduced, opium should be given the preference. The vasomotor and quieting effect of morphine is greater than that of opium.

Small doses (0.01 to 0.03 gram subcutaneously) have a stimulating effect upon the vessels; large doses (0.03 to 0.05 gram) cause vascular paralysis. A local and general sedative effect is obtained by doses of from 0.01 to 0.1 gram. We use exclusively solutions of 1 part of morphine or opium extract in 13 parts of distilled water and 2 parts of glycerin.

At the beginning of treatment the emetic effect of the drug is disturbing. This is easily overcome by rest in the horizontal position, black coffee, and the addition of a small amount of atropine.

Unpleasant accidents sometimes occur in its subcutaneous administration, either immediately after the injection or one or two hours later. In the first instance, the accident is not dependent upon the dose and not upon its injection into a vein, but probably upon mechanical or chemic irritation of a cutaneous nerve (acid fermentation of the solution), and reflex paralysis of the nerve-centers of the medulla (arrest of the heart's action and respiration). There may be instantaneous paralysis of the vessels of the skin at the point of injection which rapidly spreads (erythema and sensation of burning) and may precede the attack, or it may go no further (vasomotor paralysis). In such cases artificial respiration and stimulation are necessary, such as electric stimulation of the phrenic nerves.

In the second instance there is possibility of actual intoxication which must be treated with injections of atropine, artificial respiration, stimulation, and possibly even venesection.

Morphine never has a cumulative effect. Its effect passes off in a few hours. After it has been used in large doses for months, it becomes a necessity to the central nervous system. Out of this develops so-called morphinism (*vide* "Special Pathology").

The subcutaneous administration of morphine is that most used and the best in psychoses. It has the following indications:—

1. In melancholic states with neuralgic or vasoparetic symptoms on account of its local and general sedative effect with vascular stimulation.

2. In paranoia with hyperesthesia and neuralgic sensations, with delusions dependent upon them (delusions of physical persecution); in hallucinations with hyperesthesia of the acoustic centers, and especially in hallucinatory paranoia.

3. In irritable mania, and in cases of mania where the excitement is diminishing and in which great irritability is constantly excited by external irritation, as a result of which relapses are induced and convalescence protracted. It is also useful in the angry outbursts of imbeciles. In such cases morphine acts by reducing the increased mental excitability.

4. In states of intercurrent excitement in paralytics that are accompanied by vascular paralysis (fluxionary, maniacal). In such cases doses that stimulate the vessels are appropriate (0.03 gram).

5. In states of intercurrent excitement of chronic insanity which are due to fluxions, hallucinations, and emotional states it has a calmative effect.

6. In periodically recurring maniacal attacks and in states of circular excitement which begin with prodromal vasomotor phenomena (small, tense, rapid pulse). In such cases large doses are necessary.

Morphine is contra-indicated in marasmus, tendency to collapse, uncompensated valvular lesions, fatty heart; in mania at its height, and in cases where it has an expansive character.

Alkaloids of opium, such as narceine, introduced by Claude Bernard, and papaverine, recommended by Leidesdorf and others, may be dispensed with; besides being high priced, they are less active than morphine.

An exception may be made in the case of codeine, which, according to our experiments, may often replace opium, and besides has the advantage that it is not constipating and benumbing. It has also the advantage over morphine that it does not induce a habit. Its narcotic value is about one-third less than that of morphine. The muriate of codeine is convenient for internal use. (In pills or in mixture: codeine muriate, 0.3; aq. dest., 130; syr. menth., 20.0. One teaspoonful from two to ten times daily.) The phosphate of codeine may be used subcutaneously.

Stramonium, recommended by Michéa, conium, hydrocyanic acid, and chloroform have not come up to expectation.

After opiates, preparations of belladonna are decidedly the most effectual. However, "grave melancholic conditions with impulsive states of anxiety sometimes require a longer continuance of treatment with the extract of belladonna" (Schüle). Usually opiates are simultaneously administered, and, according to my experience, in appropriate and grave cases of melancholia the combination of opium with belladonna has shown itself to be very useful.

BROMIDES.—The bromides are among the most important remedies at our command in the domain of nervous therapeutics. Their value is due to their effect in depressing cerebral activity, especially the reflex excitability of the central nervous system. On account of their peculiar effect on the central nervous organs, their employment is indicated in those cases which present abnormal increased excitability, especially in the reflex centers, and abnormal excitement. The bromides are specially useful in psychoses that depend upon irritation in some organ (uterus), and that are to be regarded as reflex.

To this class of cases specially belong constitutional melancholia with spinal hyperesthesia, and forms of sexual paranoia during or unconnected with the climacteric, as well as persecutory insanity arising out of sensations. Bromides are further useful in periodic insanity with irritation of the genital nervous system, as well as in mania with sexual excitement, on account of their anaphrodisiac effect. Finally they are hypnotic for many patients in doses of from 4.0 to 6.0 grams. Bromides have shown themselves to possess especial value in the treatment of epilepsy, and not merely in the early and reflex cases, but also in the chronic and idiopathic cases.

Piscidia erythrina as a sedative seems to produce an effect analogous to that of the bromides. It was recommended in 1844 by Hamilton as an hypnotic. Like bromine, this drug (vegetable bromine) seems to diminish decidedly

mental and cerebral excitability and excitement. The dose is from 2 to 3 teaspoonfuls of the fluid extract. There are no unpleasant secondary effects. Piscidia is easily taken in water with a little syrup of peppermint. I have found its combination with bromides especially useful.

HYOSCINE.—One of the most powerful calmative remedies we have is hyoscine. It paralyzes temporarily the cerebral cortex. It diminishes innervation, and causes titubation, drawling speech, and sleepiness, and often a sleep lasting six or eight hours.

The hydrochlorate may be given internally up to 0.003 gram, and subcutaneously from 0.0005 to 0.001 gram per day. Its interrupted use is a benefit to patients and to nurses, since patients given to untidiness and destructiveness in states of motor excitement are quieted, as in cases of periodic mania, the excited states of epileptics and paralytics, in grave alcoholic mania, and in agitated dementia.

Since hyoscine interferes with nutrition, in all curable cases, except where it is necessary to transport maniacal patients, it is not to be recommended. Too, in incurable cases it never should be used but temporarily. It is contra-indicated in heart disease.

DUBOISINE.—Sulphate of duboisine introduced into psychiatric practice by Ostermayer, is superior to hyoscine in operation and much less dangerous.

It is a powerful sedative and also frequently has an hypnotic effect. Its indications are in general those of hyoscine. It has little effect given internally. Subcutaneously its effect is observed within a half-hour; usually a subcutaneous dose of 0.0008 to 0.001 gram is sufficient. The dose should never be increased beyond 0.002 gram. Within these limits the pulse, respiration, and temperature are not essentially influenced. It seems to have no cumulative action.

2. Physical and Dietetic Calmative Remedies.

Besides rest in bed, occasional or temporary isolation of the patient, and avoidance of irritation of the senses, certain forms of hydrotherapy as a means of calming patients are first to be mentioned.

LUKEWARM FULL BATHS from 25° to 27° R. (80° to 90° F.). These baths have not only a refreshing effect in the promotion of physical and chemic processes of the body, and producing a derivative effect by dilatation of the cutaneous blood-vessels and aiding absorption—at the same time lowering the pulse and temperature—but they have also a quieting effect through their uniform excitation of the cutaneous nerves, and thus they often induce sleep.

Ordinarily they are prolonged from thirty minutes to an hour. If fluxion to the head be present, cold compresses are simultaneously

applied to the head. This treatment has been extended to prolonged baths of about 28° R. (90° F.), introduced by Brierre, and continued for ten, twelve, or fourteen hours. During the bath the patient's head is douched with water of about 15° R. (65° F.).

Brierre found them effective in the initial stages of mania and melancholia, especially of alcoholic and puerperal origin. They are contra-indicated in anemia and in general in states of exhaustion. Under all circumstances their use must be combined with strengthening diet.

Douches, rain-baths, and plunge-baths, such as are often used in hydropathic institutes, should be avoided in the psychoses. They reduce temperature too much and excite; and douches shock mechanically and are therefore injurious.

A very good calmative and often hypnotic measure is Priessnitz packs of from one to several hours'[1] duration, which have lately been recommended.

(b) Hypnotics.

Sleeplessness, which is so frequent in the insane and has such an injurious effect both physically and mentally, is difficult to treat. The treatment must be individualized and directed to the removal of the cause of the insomnia. The causes, however, are very numerous and are not always easily discovered.

In many patients states of inanition of the brain and cerebral anemia are the causes of sleeplessness. It is in just these cases, however, that all means should be tried to produce sleep. Rest in bed with abundant food at the evening meal, with alcohol, is effectual; strong beer or good old wine, hot wine, wine-punch, and stronger liquors often in such cases have the desired hypnotic effect. If these more or less dietetic hypnotics are insufficient, then paraldehyde or chloral may be tried. In states of grave mental exhaustion injections of camphor may do some good.

Morphine and opium are, for the most part, useless with very anemic patients; sometimes in such cases the combination of these drugs with quinine used subcutaneously is successful. The author

[1] Svetlin commends the value of packing with sheets dipped in water of from 18° to 20° R. (72° to 77° F.) (one to two hours) for calming the excitement of mania. Even in periodic mania at the beginning he asserts that he has cut the attack short, and also reduced the excitement by lowering the temperature and pulse-rate. The hypnotic effect, which is never wanting, is especially valuable. Begin with applications lasting from two to two and one-half hours and continue until the sleep is shorter and less profound. In such case the duration of the application should be diminished.

uses 0.25 gram of salts of morphine in 5.0 grams of glycerin, and 1.0 gram of quinine bisulphate in 15.0 grams of distilled water. The solution is mixed and filtered. An ordinary hypodermic syringe contains 0.0125 gram of morphine and 0.05 gram of quinine.

Sleeplessness dependent upon intoxication usually diminishes with the elimination of the toxic substance. Antidotes are valuable, such as strychnine in alcoholism. In asthenic states with sleeplessness due to alcoholic excesses it usually yields to opium.

It is more difficult to choose an appropriate hypnotic in the organic psychoses like acute delirium and dementia paralytica, in which it is necessary to determine whether fluxions, defect of the excretion of waste-products, irritation of the brain, pain, etc., prevent the occurrence of sleep. In congestive states of the brain lukewarm baths with application of compresses, use of digitalis, and injections of ergotine are appropriate. When there is cerebral irritation, small doses of morphine are valuable (subcutaneously 0.01 to 0.015 gram).

In functional psychoses there are a number of conditions, partly mental, partly physical, which cause sleeplessness.

The most important mental causes are psychic hyperesthesia; painful ideas, often having the character of imperative concepts; emotional states, especially those of expectation. In such cases remedies which have the effect to bring mental quiet are indicated: opium; morphine, especially when used subcutaneously; and also sulphonal, amyl hydrate, bromides, and piscidia. This treatment has little influence to overcome delirium and hallucinations when these are the mental cause of excitement.

Important physical exciting causes are neuralgias and paralgias, against which salicylic acid, salol, antipyrin, phenacetin, salipyrin, exalgin, and morphine subcutaneously are valuable; other causes are palpitation, feeling of pulsation due to hyperesthesia of the nerves distributed to the vessels, and feelings of anxiety, to oppose which lukewarm baths, Priessnitz baths, valerian, laurel-water, monobromate of camphor in suppositories, bromides, and piscidia are useful. Excitement in the sexual sphere is also frequently a cause of sleeplessness. When the cause is mental (increased libido), large doses of bromides are useful. They are also valuable when the cause is peripheral, in combination with cool sitz-baths and anaphrodisiacs.

Frequently precise indications cannot be found, and the only thing that can be done is to employ direct narcotic influence upon the cerebral cortex. The value of the various means at hand—chloral hydrate, amyl hydrate, paraldehyde—is not very uniform. Many are not without danger when used for any length of time, and

for this reason, as well as owing to the fact that even in heroic doses they lose their effect, it is necessary to change frequently.

The sovereign hypnotic is still chloral hydrate. When used temporarily its effect is excellent. It is, however, a cardiac poison, and when used for a long time, even in medicinal doses (3 grams), induces chronic intoxication (vasoparesis, anemia, edema, tendency to hemorrhage, decubitus, mental dullness, etc.). It is contra-indicated in fatty heart and atheroma. Chloral hydrate is especially useful in asthenic cerebral states and in symptoms of vascular spasm and cerebral anemia. Infrequently, however, it has an exciting effect. The addition of morphine increases the effect of chloral. A medium dose is from 2 to 3 grams. Doses beyond 4 grams are dangerous, and may induce death by cardiac paralysis. Chloral hydrate is administered internally or by enema. Croton or butyl chloral seems to affect the heart less, but it is inferior to chloral hydrate. The alcoholate is quite like chloral hydrate in its effect, and, on account of its less irritating taste, preferable. The latest chloral preparations (chloralamid, chloralurethane, etc.) in general have the advantages and disadvantages of chloral hydrate and are inferior to it. Chloral ammonia decomposes quickly and cannot be used in practice.

The best antidote for chloral poisoning, recommended by French observers (*Annales Médico-psychologiques*, 1886, July), is strychnine administered subcutaneously. Belladonna is also said to be useful.

Paraldehyde is inferior to chloral in its effect, but it has the advantage that in medicinal doses (8 grams) its use can be longer continued without diminishing its effect. Too, it has no injurious effect. Infrequently it excites. Paraldehyde is a very valuable hypnotic in states of inanition, and also in psychoses dependent upon hysteric and neurasthenic conditions. If finally its effect begins to diminish, augmentation of the dose seems less useful than temporary suspension of its administration. Its unpleasant smell and taste are disturbing to the patient, and other patients are disturbed by the odor of the patient's breath.

To overcome this I have found the best corrective to be the tincture of orange. The mixture can be taken quite readily in sweetened water. Its administration in water by enema is also convenient. Since this drug has no depressing effect upon the heart, it may be given when there is fatty heart, valvular lesions, etc. Gastric disturbance is no obstacle, since it does not disturb digestion and the appetite is not interfered with. Sleep induced by paraldehyde is like natural sleep, and lasts from four to six hours.

Amyl hydrate stands between chloral and paraldehyde. The dose is from 4 to 6 grams, and the best adjuvant is cognac.

Trional and *sulphonal* are the best two hypnotics of the present time, because they do not injuriously affect the circulation, both belonging to the group of the disulphones. Trional has partially displaced sulphonal, since it breaks up more easily and is more rapidly excreted. It has a more certain and rapid effect than sulphonal and fewer unpleasant results, such as numbness and disturbance of equilibrium, and given in proper doses shows no untoward symptoms or toxic manifestations like those which have been observed from sulphonal. It is advisable not to give trional continuously, and to promote diuresis, using milk and carbonated waters. As a dose, 1 to 1.5 grams is sufficient, and it is best administered in toddy, warm lemonade, or

floated on beer. I generally give it every other evening, since it usually exerts some influence the second evening after administration, and I never give more than 1.5 grams. On the evening when no trional is given one can give to advantage 2 grams of potassium bromide with 0.5 gram of phenacetin and 0.03 gram of codeine.

Indeed, trional is the best hypnotic for the insomnia of melancholia, delusional insanity, mild forms of mania, neurasthenic conditions, and chorea. In insomnia resulting from pain it is of little value. However, its effect is also here manifested if combined with small doses of codeine or morphine. Further I have learned to value trional as an agent to quiet mental excitement, for which it is best given in broken doses—0.5 gram several times daily.

The hypnotic effects of opium, morphine, and hyoscine have already been mentioned. Cannabis I regard as useless in the psychoses, even in doses of 0.5 gram and more. Cannabinon is a doubtful and not harmless remedy. Urethane, even in doses up to 0.04 gram, has scarcely given any result in my observation.

Bromides and piscidia are not direct hypnotics, but indirect, in that they overcome mental and sensory hyperesthesia, and thus remove mental and physical irritation which interferes with sleep.

Before resorting to heroic use of hypnotics other physical calmative means should be tried (lukewarm baths, Priessnitz packs, compresses to the calves, galvanic currents to the head). Cases of mild insomnia may be overcome by cold infusions of valerian, or valerianate of quinine (0.1 gram).

(c) Anaphrodisiacs.

In mental disease excitement in the sexual sphere is a frequent and troublesome symptom, often attended by onanism. As a rule, the sexual excitement is central. Materia medica contains numerous anaphrodisiacs, but their effect is, in general, slight.

Of those that may be employed, we may mention the bromides first, and then belladonna, lupulin, camphor, and tincture of veratrum viride. Salicylic acid seems to have the effect to diminish sexual excitement after long-continued administration. Sodium nitrate, lately recommended by Hammond in doses from 2 to 4 grams, is not without value, especially in psychic sexual hyperesthesia (erethismus sexualis).

Masturbation is an unpleasant complication, and it demands consideration. Very little can be accomplished with medicines alone. Sometimes, especially in women, it is caused by peripheral irritation caused by oxyuris, vaginismus, leucorrhea, or pruritus. Along with local treatment, in which applications of cocaine are not without value, suppositories of the drugs mentioned are of some assistance. In general, dietetic measures (cold sponge rubbings, sitz-baths, physical fatigue, avoidance of highly seasoned food and strong wines), careful watching, and proper mental treatment are the best.

4. Tonics.

In the psychoses there are various indications arising out of causal and complicating bodily weakness and poverty of the blood. The principal remedies in such conditions are good food, good wines, and fresh air, together with certain physical applications. Of the latter, the most important are hydrotherapy and general faradization, the latter first introduced by Beard and Rockwell.

In hydrotherapeutic measures a tonic effect is obtained by the use of cold water,—that is, temporary impressions made by water of rather low temperature thrown with great mechanical force in the form of rain-baths of from thirty to forty-five seconds' duration; cool half-baths of from 24° to 20° R. (86° to 77° F.), with forcible douching and rubbing of four or five minutes' duration, and rinsing with water of from 20° to 12° R. (77° to 60° F.), followed by brisk rubbing; and, finally, rubbings with wet sheets at from 23° to 16° R. (84° to 70° F.). Even in conditions of inanition and anemia with subnormal temperature the latter treatment may be used if it be applied after the patient has been enveloped for a quarter or a half-hour in a woolen blanket; then only the superfluous heat is removed.

General faradization is to be recommended as a tonic of the greatest value. It is not painful when it is properly employed, and it may be applied to patients confined to bed. A bath filled with warm water provided with a binding post to which the negative pole of the apparatus is attached may be applied to the feet, and proves very practical.

There are also important indications for quinine and iron, and not less for the tonic effect of ergotine, as well as for nux vomica, which was recommended in 1867 by O. Müller.

5. Diet.

One of the first conditions favorable to recovery is the careful nutrition of the patient, which should be controlled by weighing the patient at intervals. Insomnia and excessive muscular exercise reduce the vitality of many patients. With this occur central and trophic disturbances, and interference with assimilative processes, which impair the function of the ganglion-cells and engender a prolonged period of exhaustion with imperfect recovery and final atrophy. A mixed diet with only a moderate amount of fat is suitable for most chronic forms of insanity. In acute cases rich milk and eggs are best, especially in those cases showing mental excitement and anxiety. A full meat diet is contra-indicated, since it causes

excitement, and, the digestion being enfeebled, there is an excessive production of elements of decomposition, which, being absorbed, irritate the nerves, disturb sleep, and locally affect the intestinal tract. The white meats, mutton, and fish are the least injurious.

An excellent article for dietetic treatment is somatose, which consists of 88.5 per cent. albumin, 7.5 per cent. salts, and 0.25 per cent. peptone. I give about $^1/_2$ ounce of it daily in divided doses, administering it in milk or soup. It usually increases the weight and improves the appetite within a short time.

Fresh air and scrupulous cleanliness are further requirements of treatment, and the whole mode of living must be regulated, which can be best accomplished in an institution through careful discipline. The majority of patients, especially the anemic, require considerable warmth.

For many patients rest in bed is an important therapeutic requirement. In all psychoses with evidence of cerebral anemia and marasmus, and in all cases when nourishment is refused, it is necessary, and it quiets and has a strengthening effect by facilitating the flow of blood to the brain, as well as by lessening muscular work and diminishing loss of heat.

The fulfillment of these hygienic indications of cleanliness, of sufficient warmth, of quiet and ample nourishment, is often possible only with great difficulty, owing to the condition and actions of the patient.

Many patients are very unclean. This obstacle to hygiene requires that they be treated[1] individually. At the height of states of excitement very little can be done. We must be satisfied to place such patients in a part of the hospital which affords fresh air, plenty of heat and water, cemented walls and waterproof floors, with beds having mattresses made in three parts; and they must be kept in such a place during the continuance of their excitement. In quiet, untidy patients the habit may be in part overcome by the regular use of enemas. In patients partially paralyzed uncleanliness is due to insufficient innervation of the sphincters, and this weakness sometimes may be overcome by the administration of nux vomica, which increases the reflex tone. In melancholics and hypochondriacs incontinence is sometimes due to hyperesthesia of the mucous membrane.

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[1] Schüle refers the symptom of uncleanliness to (1) mental dullness and motor insufficiency (dementia and states of mental exhaustion), (2) impulse to motor activity (mania), (3) delusions (paranoiac, melancholic), and gives therapeutic advice.

The slightest irritation is sufficient to induce relaxation. Dagonet recommends the use of belladonna in such cases.

Care that there be sufficient warmth in the room is a part of the hospital arrangement. Many patients undress themselves continually, and often tear their clothing; thus expense is increased, and the patient is in danger of taking cold. Clothes made in one piece of strong material, with fastenings which the patient cannot undo; and leathern gloves with locks similarly arranged, are often useful to oppose such tendencies. Where this cannot be done, the patient is kept in a warm room; and, if he will not wear any clothing, he may be given seagrass or hair with which to cover himself. Sometimes it is only possible to keep the patient in bed by means of mechanical restraint (camisole). There has been much opposition to this treatment, and with reason, for formerly restraint was much abused.

In certain cases rest in bed is urgently demanded, and, if it cannot be carried out otherwise, restraint seems indispensable—as in excited, decrepit patients who otherwise would die of exhaustion; in surgical injuries, and disease of the eyes, in order to save the parts from irritation. Of course, the application of mechanical restraint should be prescribed by a physician.

Most insane patients require careful attention to their excretions, since disturbance of consciousness, delusions, and disturbances of innervation interfere with the regularity of these functions. In obedience to the general indication to avoid any enfeebling treatment, in constipation drastics should be avoided, and the object to be attained should be sought by simple enemas or by using Hegar's massive enemas, glycerin enemas, or glycerin suppositories, or by the administration of natural or artificial mineral waters and salines. If these means be ineffectual, senna, rhubarb, rhamnus, frangula, castor-oil, and cascara may be tried. In patients who suffer with dangerous constipation and who object to taking medicines, calomel (0.5 gram) in a single dose is recommended, since it is easily administered in milk.

In many psychoses accompanied by stupor respiration is imperfect. In such cases the faradic current may be useful in overcoming this dangerous condition.

6. Important Symptoms.

Refusal of Food.—The positive refusal of food is an unfortunate complication. In order successfully to overcome it, it is absolutely necessary to discover its cause. It may have its origin in

somatic disturbances (gastric catarrh, angina, and coprostasis) or in mental causes (delusions, hallucinations, etc.). Individualized treatment is always necessary.

When refusal of food occurs, the first thing to be done is to put the patient in bed in order to prevent the dissipation of body-heat and lessen muscular movement. The mouth should be kept clean by washing with salicylic acid.

Decision of the question as to when active interference is necessary will depend upon the strength of the patient. When the patient is in bed and his general nutrition is good, and the mouth well cared for, and if water is taken, forced feeding may be dispensed with for about a week.

If nutrient enemas and the injection of nutrient fluids into the mouth, and the use of invalid cups with tubes, are not sufficient, then it is necessary to resort to forced feeding.

Thanks to tubes made of soft rubber, this may be carried out through the nose with the aid of a rubber syringe without difficulty. Before nourishment is forced through the tube, it must be ascertained whether the tube has really entered the stomach and is not in the pharynx, or bent up in the mouth, or possibly in the trachea. Coughing, attacks of suffocation, distress, cyanosis, inspiratory and expiratory sounds, indicate the position of the tube. Expiratory sounds alone may be caused by the passage of air from the stomach.

As the surest means of determining whether there be danger, Kräpelin recommends auscultation of the stomach while air is blown into it through the tube. The fluid nourishment administered through the tube must not contain solid matter to obstruct it (milk, eggs, bouillon, codliver-oil, wine, etc.). The fluid, since it reaches the stomach directly and is not warmed by the vessels and the mouth, should be administered lukewarm.

The mouth and nose must be free of fluids during the feeding. When a few drops of the fluid have been injected, and the passage to the stomach is shown to be free, then the feeding is to be finished as quickly as possible. In general, two feedings a day are sufficient. In a patient that has refused food for a long time and whose stomach has become irritable, the first time but a small amount of unirritating food should be given (milk and eggs); otherwise vomiting may occur. If there be a tendency to vomit, a few drops of chloroform may first be given. If the patient regurgitate the food, and if the fluid accumulate in the pharynx, the tube must be removed as quickly as possible.

Forced feeding is sometimes the only means to save the life of a patient. It must not be used too early, nor should its employment be put off too long. Its dangers are the entrance of food or mucus into the air-passages and the possible occurrence of pneumonia or gangrene of the lung.

Precordial Distress. — This symptom requires unremitting watching, for at any moment the patient may injure himself or commit violence toward others. In mild cases lukewarm baths, sinapisms over the stomach, bitter almond-water, or extract of belladonna may

be sufficient. Anemic patients in a reduced physical state should be kept in bed.

In severe cases opiates are decidedly useful. Where the pulse is small, wanting in force, and infrequent, opiates in connection with acetic ether should be prescribed. Where the pulse is frequent and the action of the heart stormy, they should be combined with tincture of digitalis. Opium seems most effectual when administered subcutaneously (precordial distress), especially when the distress is accompanied by neuralgias or paralgias (injection at the painful point).

Chloral hydrate also may overcome attacks of precordial distress in onanists, and especially in neurasthenics.

HALLUCINATIONS.—Michéa and others of the older authorities recommend the tincture of stramonium to overcome hallucinations. Modern opinion, owing to knowledge of the varying significance and origin of hallucinations, places no reliance upon a specific. The psychic element of hallucinations is not amenable to any direct treatment; they must be treated like other mental phenomena.

To overcome auditory hallucinations dependent upon sensory hyperesthesia, the quieting anelectrotonic effect of the constant current may be tried. Similar conditions (unvarying hallucinations with erethism) I have treated with favorable results by the methodic administration of morphine.

Light and noise are in such cases not without influence. Certain patients have more visions in the dark (delirium tremens).

Patients subject to auditory hallucinations often hear more voices when they are isolated. These facts should be considered, but they do not justify a general rule. Auditory or visional hallucinations arouse the suspicion of a peripheral cause and call for ophthalmoscopic or auricular examination, which may give indications for treatment.

II. PSYCHIC TREATMENT.

Psychic treatment of patients is no less important than somatic; indeed, its range of application is still more extensive. Here it is not a drug that the physician prescribes, but a remedy that he creates in himself and dispenses, either as a part of his personal influence or as dependent upon the arrangement of his hospital and its regulations.

Clinical psychiatry has for one of its objects the development of this important aspect of medical knowledge and homiletics. It is necessarily a part of the education of the physician, and it bears its best fruit even at the bedside of those only physically ill, for correct diagnosis and prescription do not constitute the full duty of the physician, but much depends also upon his manner with the patient and the personal impression he makes. Charlatans are often better psychic physicians than the doctors themselves. The actual

results attained by miraculous pictures, pilgrimages, holy images, holy waters, conjurations, and the like, at least indicate the power of faith and trust in mental healing. The diagnostic acumen and therapeutic knowledge of two physicians is often equal; and yet their results are different, because the art of mental treatment makes a difference. Many physicians possess the power as a natural talent, and use it instinctively; and they have always been the greatest who, along with science, have consciously applied the principles of mental treatment learned from experience.

It seems almost impossible, where one individual comes in mental contact with another and an interchange of psychic influence takes place, to give rules for action. They can be applied only from a general standpoint to certain phases of a disease, and become in this sense an object of study. The concrete case does not lend itself to generalization, just as psychic materia medica is inexhaustible; in one case perhaps a glance, a word; in another, the granting of a wish or the offer of a pinch of snuff exercises its healing influence. In this individualization lies the interest, as well as the difficulty, of psychic treatment, which may be learned, but hardly methodically taught.

In the psychic treatment of the insane two phases of the disease must be distinguished with the greatest clearness: The period of origin and the acme, and the change, either to recovery or dementia.

During the development and at the height of the disease the task of mental treatment is properly negative—the removal of injurious mental influences: efforts to distract, amuse, teach; religious influences; threats and exorcism. All such efforts can do only harm, since they excite and embitter. The fundamental necessity in all mental therapy at this stage of the disease is to place the patient in the greatest possible mental quietude.

The melancholic requires this, because painful impressions are excited by all psychic activity, even those that are in themselves normally pleasant; the maniac, because his cerebral excitement is otherwise intensified; and exhausted patients require it because every mental impression exhausts them still further.

It is most unwise to attempt to overcome delusions by argument. Delusions are symptoms due to cerebral disease, and depend upon and disappear with that disease; therefore discussion and argument are without avail. It is better to remain passive before them, to simply ignore them, to lead the conversation to another subject, and avoid everything that might recall them to the patient. The patient should be isolated as much as possible with his own delusions. It would be an error to fall in with the delusion and thus strengthen it.

In many cases, however, treatment that is simply passive and limited to the removal of injurious mental influences is insufficient. The patient requires actual isolation. Often sufficient isolation from

external injurious irritation is obtained in an asylum with its physical and mental dietetic regulations. Such a change at one stroke removes the patient from the ridicule of others; from the ignorance of well-intentioned friends and relatives; from the excitement of social, family, and public life; and from the dangerous influences of improper and ill-timed religious impressions; he is placed in new and favorable surroundings, and his disease is subject only to the effect of isolation. But the asylum also has at hand an important and effectual remedy in complete isolation of the patient, attained by placing him alone in a room.

Frequently the isolation room is employed for administrative reasons, owing to the dangerousness of the patient either to himself or others, or owing to uncleanliness, noise, etc.; but it should not be forgotten that it is one of the most valuable means of quieting and cure the physician possesses. However, it can be used only by the experienced. Thus, if it be employed at an improper time or if its use be too long continued, it may do great harm to the patient.

Its indications are the more pronounced states of mental or sensory hyperesthesia, or great irritability of a patient who cannot endure contact with others, or who, in such contact, is constantly excited by it, as in cases of active melancholia or mania at their height.

The isolation in its broadest sense, with reference to the strictness with which it is employed, should correspond always with the state of excitement and excitability of the patient.

At the height of the disease, when hyperesthesia of the sense-organs is greatly intensified, the room must be darkened, and at night it should only be dimly lighted. By appropriate arrangements, noises from outside should be prevented. A noisy ward in an insane asylum, like those frequently noted, can have no other purpose than the temporary care of patients; as a means of cure, it is worthless.

The intercourse of the nurses with the patient must be reduced to a minimum. If the excitement of the patient diminish, then appropriate diminution of the isolation is indicated: more daylight is allowed, and more frequent intercourse with the nurses; occupation with light reading and work; change to an ordinary room, which at first should belong to the patient; temporary cessation of isolation in walks with an attendant; intercourse with other patients and other persons of the institution.

Finally, the isolation of the institution itself is interrupted by resuming relations and correspondence with others; visits from friends and later from relatives; visits to surrounding places of interest and pleasure.

In the period when the disease changes for better or worse psychic therapy has an active part to play. The art of the alienist is here displayed in his understanding of the individuality of the patient to lead up to the restoration of the former mental personality, or at least to save all that is possible out of the mental wreck.

Innumerable patients recover quickly and spontaneously when improvement is once established, and the well-regulated hospital for the insane, with its library, its music, its amusements, parks, and means of employment, has only to place these means at the disposal of patients with a reasonable regulation of their employment.

With many patients, however, at the turning-point of their disease, positive interference is necessary in order to free them from the habit into which they have been forced by their mental disease.

In such cases any delusions that still exist must be shaken, not by logic and argument, but by the friendly influence of ridicule and encouragement. Surprise by letters or visits from relatives supposed to be dead often aid in removing the last doubt. One of the best means to help the patient in a return to himself, and to free him from the remains of his disease, is work in harmony with his previous occupation and individual circumstances, especially garden and farm work, which at the same time strengthens the body. Sometimes gentle compulsion is necessary, and even careful education by praise or slight punishments may be necessary, in order to re-create, as it were, the mental personality. Too, in cases where the termination of the disease is unfavorable, and mental weakness supervenes, mental therapy has a wide field. In such cases we must save what there is to save, and keep the patient from sinking into deep dementia. The principal means for this purpose are occupation for the patient and keeping him well ordered and clean.

Innumerable unfortunates, who, if left to themselves, would degenerate into filth and complete dementia, the regulations of a hospital for the insane keep at a useful mental level and make the employment of the mental powers that remain useful. Sometimes delusions of grandeur keep such patients from working, or give to their conduct a perverse direction. In such incurable cases, with the disappearance of the emotional accompaniment, repression of the delusions may be indicated, to prevent action in obedience to them.

Leuret in this sense created a so-called moral treatment, and thought that he cured such patients by intimidation. Of course, there was no such thing as cure, but simply mental training, which, however, had a certain value for the patient and those associated with him. Convenient measures for disciplining such patients are found in the faradic brush and rain-douches.

Treatment by Hypnotic Suggestion.

Considering the want of effect of simple suggestion in mental disease, and the great effect of hypnotic treatment in the neuroses, the employment of this powerful means of mental treatment in cases of insanity immediately suggests itself.

In fact, it would be a great gain to influence the feelings, thoughts, and impulses of such patients, and by suggestion to overcome dangerous or troublesome symptoms, such as hallucinations and delusions. But for those experienced in psychiatry hypnotism can only be employed with doubt as to the result; because (1) insane patients are only exceptionally capable of that state of attention, passivity, feeling, and will, necessary to the successful induction of hypnosis; (2) because many mental diseases depend upon organic changes in the brain, and suggestive treatment can effect only functional dis-

turbances; (3) because certain symptoms, such as many delusions and hallucinations, even though they are not demonstrably the result of organic changes, are yet so complicated and so intimately interwoven with the mental mechanism that it hardly seems possible to influence them by suggestion, and it is difficult to formulate suggestions to overcome them.

Thus theoretically it is presumable that successful treatment by hypnotic suggestion can only be expected in functional psychoses, and, too, in patients that are aware that they are sick, and who lend themselves to hypnosis.

In general, conditions appropriate for such treatment may be enumerated as follows: Simple disturbances of mental feeling; formal disturbances of thought, especially imperative conceptions and delusions, when they are merely autosuggestions based upon false ideas, and not primordial delusions, or explanatory delusions of melancholia; and finally acquired abnormal instinctive impulses. Following ordinary psychiatric terminology, it might be possible to apply such treatment in melancholia without delusion; in the majority of neuropsychoses, especially hysteria, hypochondria, neurasthenia, and the psychoses in the form of imperative ideas; in those dependent upon alcohol, cocaine, chloral, or nicotine; and in mental impotence and contrary sexual instinct.

In general, the result corresponds with the theoretic limitations and the circumstances. According to the experience of myself and others, the treatment seems effectual, not only in abnormal moods, emotions, feelings, impulses, and even abnormal ideas and hallucinations, but also in physical disturbances, such as sleeplessness, loss of appetite, constipation, neuralgia, etc.

Many observers in all countries report success in melancholia without delusion; in delusional insanity, especially alcoholic and hysteric and in the hysteric psychoses; in chronic intoxication, especially alcoholism and morphinism. The results of hypnotic treatment in dipsomania and contrary sexual instinct (von Schrenck-Notzing) are worthy of remark. *Folie du doute* is often favorably influenced. Symptomatic manifestations of abnormal instinctive impulses, especially those that are sexual or alcoholic, and the desire for morphine and cocaine, are influenced by suggestive treatment.

CHAPTER VI.

Treatment During the Period of Convalescence.

During the period of convalescence the patient also has great need of the physician's care. The physical and mental process of restoration must be watched, and the slighter indications of the disease passed through must be taken into account. The cure of vegetative disturbances, such as anemia and uterine disease that exercised an injurious influence, must be completed. Often, for a long time, sleeplessness continues, and requires care and proper medical attention.

It is only necessary to mention that the enfeeblement and physical exhaustion, like that which follows severe diseases, are not to be treated with stimulating remedies, but by dietetic means. The convalescent patient is still weak mentally and very sensitive, and longs to be again with his family and take up his occupation. Under such circumstances it is better to temporize. Too early visits from relatives should be prevented, since they lead usually to too early discharge of the patient from treatment, and thus favor relapses. Too early discharges are always dangerous, especially when the convalescent returns to his former misery, and, as is often the case, to ridicule, mistrust, and unsympathetic treatment.

Every convalescent should be kept for a time in quarantine, as it were, before he is allowed to leave the institution, in order gradually to test his powers. In some cases, when the mental powers are defective and the individuals are irritable and troubled with homesickness, it is dangerous to keep them away from home too long. Under such circumstances it is necessary to choose the lesser of two evils and discharge the patient in order to prevent a relapse with the patient still in the institution.

Where circumstances permit it, the convalescent, before returning to his former surroundings, should be led up to it by a sojourn in the family of friends or in the country, or by travel. Along with this sometimes other medical prescriptions may be combined, such as sea-bathing, water-cures, or a sojourn in an appropriate climate, etc.

BOOK III.

Special Pathology and Therapy of Insanity.

INTRODUCTION.

Classification of the Psychoses—Forms of Insanity.

THE fundamental premise in the establishment of the special pathology of insanity is the classification and grouping of disease-pictures, individually so different and confusing in their varieties, according to a uniform plan.

The need of a satisfactory classification of mental diseases was early felt, and led to innumerable attempts at classification, of which, however, none has ever been generally and unconditionally accepted. Notwithstanding the difficulty of such an effort, in the interest of science, as well as to promote an understanding between author and student, it must be attempted.

The first question is: according to what principles in the present state of the development of psychiatry should such an effort be made?

In pathology there are three principles of classification: anatomic, in accordance with the anatomic changes at the foundation of the diseases; etiologic, according to the special causes; clinical and functional, according to the manner in which functions are changed by the disease-process.

There can be no thought of an anatomic classification of the psychoses. We know too little of the anatomic processes of which the phenomena of insanity are the clinical expression, to say nothing of anatomic differences. However, from the great number of psychoses, which to-day are regarded as purely functional brain diseases, a group may be separated in which pathologico-anatomic changes are never wanting. When in certain symptom-complexes this anatomic substratum is identical, the clinical name of the disease may be replaced by an anatomic term, or at least the latter may be added to the former.

These cerebral diseases with predominating mental symptoms in the narrower sense—or organic psychoses in contrast with functional psychoses—constitute the transition from special psychiatry to special cerebral pathology, from which they are separated only practically by the predominance of mental disturbances. These latter, however, are not independent, as in the psychoses in a strict sense, but entirely dependent upon the intensity and extent of anatomic changes (Schüle). Therefore they do not follow the psychologic development and course of ordinary psychoses, but present symptoms of a concomitant affection of the psychic organ contemporaneous with a grave cerebral disease. Since, as a rule, the latter is progressive, there is always an increasing and incurable disturbance of the psychic organ (dementia) in case the anatomic disease-process has not too early invaded vital centers and proved fatal.

Since such a disease-process passes beyond the cortical areas of the brain and involves infracortical centers and nervous paths, the disease-picture is not limited to psychic and psychomotor phenomena, but presents motor, sensory, and vasomotor disturbances of functions that are combined with psychic symptoms and have equal value. The disease-pictures belonging in this category, with evident cerebral changes, are the following: 1. Acute delirium. 2. General paralysis of the insane. 3. Cerebral lues in the sense of diffuse luetic disease of the convexity. 4. Senile dementia.

An etiologic classification promises more, with the assumption that insanity arising out of definite causes presents certain peculiarities of symptoms and course which permit a reference of the disease to the cause with certainty. Unfortunately this assumption—a specific cause with specific peculiarities of the disease-picture—is not sufficiently justified in general to be elevated to a general principle.

With few exceptions, insanity is the effect of the combined influence of various causes the individual valuation of which is difficult; the manner of producing the effect is often obscure; the clinical expression is equivocal and, owing to interaction, devoid of clearness. In recognizing the efforts of Morel, Skae, Clouston, Kahlbaum, and others in this direction, it must be admitted that an etiologic classification of insanity at the present time is impossible, even though in the single case the etiologic moment must be taken into consideration.

However, if the hope is not fulfilled that a given cause,—such as injury of the head, lues, uterine disease,—even if it be the only cause acting, owing to the difference of pathogenesis, localization, etc.,

cannot produce a disease-picture distinct in its course and symptoms, still it may be expected that certain influential causal factors, like heredity, constitutional condition, or poisons, might characterize an entire group, even of varied disease-pictures, by common symptoms and a common course.

With the assumption of the correctness of this view, the use of the etiologic factor, at least in the separation of the larger groups of insanity, seems justified and useful, in that it permits a reference of the cases from their pathogenesis, course, and symptoms to a particular constitutional foundation.

In fact, it makes a fundamental difference whether the psychic disturbance develop in a robust brain well constituted and with normal functions from birth, or whether it be the expression of an invalid brain, hereditarily burdened, or otherwise unfavorably influenced in its development. This fact, which was thoroughly appreciated by Morel, and which later Schüle emphasized, makes it necessary to distinguish most carefully the psychoses occurring in the normally developing and normally developed brain, in accordance with the presence or absence of hereditary factors having etiologic importance.

Mental disturbances that affect individuals of robust brain may be called psychoneuroses. Those developed upon a defective foundation may be called degenerate insanities. It need scarcely be added that these two grand groups cannot be strictly differentiated, for, as in all other departments of organic life, they present transitional cases. Thus, it may be questionable whether an individual with bad mental ancestry, who up to the time of his insanity was normal, is to be placed in one or the other of these groups. Moreover, a well-constituted brain may, as result of head injury or other cause (drunkenness), acquire a degenerate constitution which gives a degenerate character to any accidental psychosis.

Too, it is not merely the etiologic factor that justifies the differentiation; there are also other peculiarities in the origin, course, and grouping of symptoms upon which the differential diagnosis rests. Even Morel recognized these clinical peculiarities of degenerate insanity, but he attributed them exclusively to heredity. This view must be enlarged, since hereditary degeneration constitutes only one important aspect of degenerate insanity in general, which, however, may have its origin in acquired degeneracy (in trauma, brain diseases, anomalies of development, etc.).

The etiologic and clinical points serving to distinguish the psychoneuroses from states of psychic degeneration, which I have

employed in my clinic for years for didactic purposes, and which, of course, are somewhat dogmatic, are the following:—

I. Psychoneuroses.	II. Psychic Degenerations.
1. Parasitic, accidentally acquired diseases in individuals whose cerebral functions were previously normal and whose disease could not be foreseen.	1. Constitutional,—*i.e.*, diseases having their basis in the whole constitution; diseases in individuals who from their earliest childhood betray a neuropsychopathic constitution, the functions of whose central nervous systems were always in a state of unstable equilibrium, and the loss of which was to be feared.
2. Disease based upon temporary disposition (grave physical disease and the simultaneous action of powerful exciting causes). Hereditary predisposition not excluded, but only latently present in the brain of one easily affected, but previously normal in its functions.	2. Slight exciting causes, even physiologic phases of life,—puberty, menses, puerperal state, climacteric disease, for the most part conditioned by pathologic and usually hereditary predisposition; or by the continued effect of injurious influences (trauma capitis, acute brain diseases, etc.), which, for the most part, affect the brain during its development. In these cases frequently the psychic disease is the last link in a chain of neuropathic conditions, passing always from one to another severer form (neurasthenia, hysteria, hypochondria, epilepsy).
3. Tendency to cure of the disease and infrequency of relapses.	3. Slight tendency to cure; for the most part, only temporary return to the *status quo ante;* great tendency to relapses and development of more severe forms of disease.
4. Slight tendency to transmission to descendants, and, when it occurs, in benign forms (psychoneuroses).	4. Great tendency to transmission, with progressive increase in the gravity of the form of disease (progressive hereditary degeneration).
5. Typic course of the disease-picture. Mania, as a rule, arises from a melancholic initial stage; and so-called secondary conditions are the terminations of primary conditions. The disease-picture, even when it appears, has an independent form—has a certain duration and independence. The whole course of the disease is quite narrowly limited in time, and goes on either to recovery or dementia.	5. All forms of the psychoneuroses are possible here, but they appear principally in the graver organic forms. The course cannot be predicted. There is curious and irregular variation of the various forms, with inexplicable and abrupt single series of symptoms. The form is of short duration, and is also not pure, but rather a mixture of various forms. Thus, the whole disease has a protean character, and cannot be classified

I. Psychoneuroses *(Continued).*	II. Psychic Degenerations *(Continued).*
	according to a physio-psychologic principle of classification. The general course is chronic and may continue throughout the rest of life, at the same time remaining at a certain stage of development, and leading to dementia only late or not at all. In other cases of grave progressive degeneration, on the other hand, the mental decline is rapid.
6. No tendency to periodicity of the attacks or the grouping of the symptoms.	6. Great tendency to periodicity; periodic insanity is a degenerate manifestation.
7. Sanity and insanity are sharply defined, and in striking contrast.	7. Often quite unnoticed transition from pathologic predisposition to actual disease. Curious mixture of lucidity and insanity at the height of the disease, even to the extent of recognition of the insane condition.

Further subdivision of these two principal groups of insanity in the developed brain cannot be attempted from an etiologic standpoint, for, in the psychoneuroses, the etiologic factor does not play an important part in determining the symptoms and course, and, in the psychic degenerations, the etiologic factor, at least as far as our present knowledge goes, gives only certain clinical marks to the whole group, without, however, permitting further differentiation in accordance with the etiologic factors of the degeneration itself. This is especially true of so-called hereditary insanity, which, though it usually appears in certain forms (moral, periodic, arising out of transformation of the constitutional neuroses to insanity of imperative conceptions), is not made up of these exclusively.

In the further classification of the psychoneuroses, a clinico-functional principle is the only one possible. The manner of grouping of symptoms and the course are of the first importance in the classification of these typic conditions, which pass through a certain course and are the expression of a systematic disease-process in the psychic mechanism.

With reference to the course, two insane conditions may be differentiated: the primary, and the secondary arising out of the former. This differentiation is also of value from a prognostic standpoint, in that possibility of cure in general exists only in the primary conditions.

Among the primary disturbances, other distinctions may be made in accordance with the nature of the functional disturbances:—

(A) States of interference with the activity of the psychic functions, going even to inhibition, together with painful emotional states, with even micromania as explanation of the inhibition and depression. Implication of the central sensory spheres (hallucinations, illusions) is subsidiary. All degrees of disturbances of consciousness are possible: melancholia.

In melancholia may be distinguished:—

1. A mild form, where there is no deep disturbance of consciousness and the psychomotor inhibition is psychically induced: simple melancholia.

2. A graver form, with deeper disturbance of consciousness, and where the inhibition is organic (tetany, catalepsy): melancholia with stupor.

(B) States in which the activity of the psychic functions is facilitated, even to absolute lack of control, accompanied by predominating pleasurable feeling, reaching even the extent of grand delusions as a motive for the anomalies of psychic activity and feeling. Implication of the central sensory sphere is subsidiary. All degrees of disturbance of consciousness are possible: mania.

As in melancholia, there may be differentiated here:—

1. A mild form, where there is no decided disturbance of consciousness and the psychomotor acts are psychically induced: maniacal exaltation.

2. A graver form, where there is deeper disturbance of consciousness and the psychomotor acts are organically induced by irritative processes in the psychomotor centers: impulsive imperative movements, furious mania.

(C) States of temporary diminution of psychic activity, going even to its actual absence, inclusive of emotional states, which may be temporarily absent. This necessarily leads to grave disturbance of consciousness, which may go so far as stupor: stupidity.

(D) States of central excitement of the senses with continuance of external sense-perception. This necessarily leads to disturbance of consciousness (confusion). Emotional and motor anomalies are not primary, but secondary, manifestations, dependent upon the content of the delusions: primary hallucinatory insanity.

If these primary states do not go on to recovery, then they end in so-called secondary states. These are characterized by disappearance of the emotional state; destruction of the former personality and the logical interdependence of feeling, thought, and will,

and especially of co-ordination of the psychic acts. As important signs of the occurrence of mental weakness may be mentioned: The loss of ethic and esthetic feeling; the weakening of intellectual, and especially of logical, activity (states of mental weakness). In these conditions, depending upon whether the mental mechanism is kept in relation more or less complete with groups of delusional ideas and acts in accordance with them, or whether a general deterioration or a general weakening of the mental activities has taken place, two conditions may be distinguished: secondary paranoia, and dementia. Clinically, dementia may be divided into an agitated and an apathetic form, according to whether there be activity in the ruined psychic mechanism expressed in incoherent ideas and impulses, or absolute quiet and absence of reaction.

If we turn now to the differentiation of the psychic states of degeneration, and attempt a classification analogous to that of the psychoneuroses, it will be found to be impossible. It is only in isolated cases that the periodic recurrence of an attack is a striking manifestation.

These states are seen to be peculiar, and diseases of the person in the strictest sense of the word, in contrast with the psychoneuroses, which are systematic psychic diseases with typic development and an empirically clear and regular course. As is shown by the etiology, which has its root, for the most part, in hereditary conditions, these degenerate states must be considered from an anthropologic standpoint, and do not permit a classification based upon a psychologic principle.

Since the etiologic standpoint based on anthropologic grounds permits only a separation of the whole group from the psychoneuroses, it becomes necessary to make a further classification of these disease states, which are always more or less individual, according to peculiarities in the grouping of symptoms, the course, and the manner of origin.

The following types may be distinguished:—

(a) Constitutional affective insanity, characterized by the uniform character of the disease-picture, which is essentially emotional and presents only formal disturbances of thought.

(b) Paranoia, characterized by a change of the personality, or at least of its relations to the external world, even to a degree where a new ego is formed dependent upon primary delusions without emotional foundation, which quickly become systematized. This system of delusions arises out of the fact that consciousness does not undergo profound disturbance, and the power of judgment and drawing con-

clusions is untouched. The emotional states and acts arise out of the delusions, or are due to them.

(c) Insanity arising out of constitutional neuroses: epilepsy, hysteria, neurasthenia, hypochondria.

(d) Periodic insanity, characterized by periodic recurrence, in which the content and course of the attacks are essentially similar.

In contrast with these mental disturbances affecting the fully developed brain are to be placed, finally, states of mental defect, the cause of which lies in injurious influences that affect the brain during fetal life or during the period of development, as a result of which the further development of mental life is disturbed: arrest of psychic development.

This group may be again divided into idiocy and cretinism, depending upon whether the local or constitutional cause affect merely the psychic organ or induce at the same time deformity of the skeleton and the vegetative organs. These states of original mental weakness may manifest themselves in defective development of either the intellectual or ethic functions, with manifold variations (original states of mental weakness). The cases in which the ethic feelings are specially defective are usually called *moral insanity.*

The following schema of classification is derived from the foregoing principles:—

(A) Mental Diseases of the Adult Brain.

I. Diseases without anatomico-pathologic lesions: functional psychoses.

(A) Psychoneuroses: i.e., *disease-states of the normal and robust brain.*

1. Melancholia (inhibitory neurosis of the psychic organ).
   (a) Melancholia—simple.
   (b) Melancholia—with stupor.
2. Mania (neurosis with lack of inhibition).
   (a) Maniacal exaltation.
   (b) Furious mania.
3. Stupidity, or acute curable dementia (neurosis of exhaustion).
4. Primary hallucinatory insanity (hallucinatory delirium, hallucinatory psychoneurosis).

Appendix: Terminal states of these conditions in incurable secondary delusional insanity and secondary dementia, with clinical varieties in the agitated or apathetic form.

(B) Psychic degeneration: i.e., *disease-states affecting the abnormal, predisposed, or weakened brain.*

1. Constitutional emotional insanity *(folie raisonnante).*

2. Paranoia.
   (a) Original form.
   (b) Acquired (late form).
      Persecutory paranoia (primary and predominating delusions of injury to the personality).
         (a) Typic form.
         (b) Querulous paranoia.
         (c) Expansive paranoia (primary and predominating delusions of aggrandizement of the personality).
            1. Paranoia with inventive or reformatory ideas.
            2. Religious paranoia.
            3. Erotic paranoia.
3. Periodic insanity.
4. Insanity arising out of the constitutional neuroses.
   (a) Neurasthenic insanity.
   (b) Epileptic insanity.
   (c) Hysteric insanity.
   (d) Hypochondriac insanity.

II. Diseases which present constant anatomico-pathologic lesions: brain diseases with predominating mental symptoms; organic psychoses.

1. Acute delirium (transudative hyperemia with transition to acute diffuse periencephalitis).
2. Chronic paralysis, or dementia paralytica (chronic diffuse perienceph-alomeningitis).
3. Cerebral lues.
4. Senile dementia (primary cerebral atrophy).

Appendix: Intoxications (transitional groups between I and II).
1. Chronic alcoholism.
2. Morphinism.

(B) Arrest of Psychic Development.

Idiocy (possibly with physical degeneration, cretinism).
(a) Predominating states of intellectual defect (original mental weakness and dementia).
(b) Predominating states of ethic defect (original moral mental weakness and dementia).

PART FIRST.

Psychoneuroses—Primary Curable States.

CHAPTER I.

Melancholia.

THE fundamental phenomenon in melancholia consists of the painful emotional depression, which has no external, or an insufficient external, cause, and general inhibition of the mental activities, which may be entirely arrested.

Concerning the inner basis and relation of these two fundamental anomalies of the psychic mechanism in melancholics we have only hypotheses.

While some regard the painful depression as the expression of a disturbance of nutrition in the psychic organ (psychic neuralgia) from which, as a result, arises the inhibition of the mental activities, a more recent theory regards the inhibition as primary, and the psychic pain as a secondary manifestation due to consciousness of the mental inhibition. Both these theories are at best one-sided. The hypothesis that makes psychic pain secondary does not accord with experience. It could only be so regarded if the intensity of the psychic pain stood in proportional relation to the degree of inhibition, which, however, is not the case, and if the inhibition preceded the psychic pain in time; but even this hypothesis finds no support. The first manifestation is psychic pain; then inhibition follows, which, of course, becomes a new source of psychic pain. The facts force us to conclude that psychic pain and inhibition are co-ordinated phenomena, between which, of course, a mutual reaction is not excluded. At the same time a common fundamental cause may be thought of: a disturbance of cerebral nutrition (anemia?), which leads to lessened production of vital force.

Melancholia, from a comprehensive, unprejudiced point of view, may be defined as an abnormal condition of the psychic organ dependent upon a disturbance of nutrition, characterized, on the one hand, by a psychic painful emotional state and manner of reaction of the whole consciousness (psychic neuralgia), and, on the other hand, by inhibition of the psychic activities, feelings, intellect, and will, which may go to the extent of arrest.

SYMPTOMATOLOGY.

PSYCHIC SYMPTOMS.—The content of the melancholic consciousness is psychic pain, distress, and depression, as the expression of a

nutritive disturbance of the psychic organ. This painful depression in its content does not differ from the painful depression due to efficient causes. The solidarity of the psychic activities causes the depression to be total; the psychic organ is incapable of calling up any other than painful psychic activities, so long as the causal abnormal disturbance exists. This organically conditioned state of psychic pain is psychologically augmented by other simultaneous disturbances of the psychic mechanism, largely arising out of the painful depression (*comp.* page 49).

These accessory sources of pain are found in unpleasant apperception of the external world in the mirror of the painfully altered consciousness (psychic dysesthesia); in the feeling of being overwhelmed which the patient experiences in his psychic mechanism; and finally in the consciousness of inhibition which all psychic activities thus undergo (ideation, desires). The most painful thing for the patient at the height of the disease is the absence of both pleasant and unpleasant emotional coloring of ideas and sense-perceptions (psychic anesthesia).

The general result of these painful psychic processes expresses itself clinically in depression and sadness. Psychic dysesthesia causes the patient to be retiring, with desire to avoid people, or to assume a hostile attitude toward the external world; psychic anesthesia causes indifference, even to the most important things of life.

Along with the disturbance of content there is a change (formal) in the sphere of emotional life. This is manifest in the fact that ideas, as well as sense-perceptions, are accompanied with extremely vivid unpleasant feelings, which may attain the degree of affects, while at the same time the threshold of excitability of emotion lies abnormally deep.

Thus it may happen that every mental act, even sense-perceptions, may be accompanied by intense feelings of displeasure (psychic hyperesthesia).

Such states of psychic hyperesthesia, like phenomena observed where nerves are affected with neuralgia, precede those of psychic anesthesia, or they alternate with the latter.

The affective states thus produced express themselves in feelings of displeasure or sadness, which may be intensified to despair; or in feelings of surprise (embarrassment, confusion, astonishment, fright, shame) or emotional states of apprehension (anxiety, oppression, fear). This abnormal excitability expresses itself clinically in irritability, sensitiveness, and moodiness, since hyperesthesia and anesthesia alternate and differ in intensity.

The mental need of quiet in the patient is expressed in retiring from society and seeking isolation; the avoidance of sense-impressions and emotional activities.

Disturbances in the intellectual domain are partly those of form and partly those of content. The former consist of retardation of thought and slowness of the association of ideas.

This retardation is part of the general slowing of psychic activities; in part, too, dependent upon the painful feelings with which every psychic act is colored.

The inhibition of the free course of ideas is an important accessory source of psychic pain. This expresses itself clinically in a feeling of fatigue, of mental vacuity, and of lessened mental energy (stupidity, lack of memory of which so many patients complain). Temporary complete stoppage of thought induces despair. The disturbance in the association of ideas is essentially due to the fact that only such ideas are possible as are in accord with the painful feeling, and thus the sum of the ideas that can possibly be reproduced is limited to those of painful content. Inhibition and disturbed association favor the occurrence of imperative ideas.

Formal disturbances of ideas occur in all melancholics. They may be the only anomalies (melancholia without delusions); frequently, however, there is disturbance in the content of ideas: delusions.

In the great majority of cases these arise psychologically and are an attempt to explain the abnormal state of consciousness; but the delusion is not necessarily the product of a logical conscious operation of thought; it may also be merely the conscious result of an unconscious product of association. Delusions arising out of errors of the senses are infrequent in melancholia, and pure primordial delusions are still more infrequent.

The content of melancholic delusions is extremely varied, for they include all varieties of human trouble, care, and fear. Since they are always created out of the ideas peculiar to the individual, it is natural that they should vary infinitely according to individual endowment, sex, position, education, and age, even though certain constant cares and fears of the human race lend to the delusions of innumerable melancholics of all races and all times certain features and characteristics of content which are alike (Griesinger).

The common character of all melancholic delusions is that of suffering, and, in contrast with the similar delusions of paranoia with delusions of persecution, they are referred to personal guilt.

Errors of the senses are very frequent in the course of the severer forms of melancholia.

Just as the content of the ideas in melancholia are hostile and painful, so, too, are the delusions frightful. In affective states, especially where they are of the nature of an anxious apprehension, errors of the senses are especially intense and frequent.

The peculiar inhibition of the psychic activities in melancholia expresses itself with especial clearness on the psychomotor side of mental life.

The intensification of mental pain by every kind of mental activity causes laziness, avoidance of work, neglect of occupation, and inclination to retire and take to bed. The want of self-confidence makes the attainment of ambition seem impossible and destroys all effort. The inhibited psychic activity in itself, the difficulty of change of ideas and their coloring by unpleasant feelings, the loss of mental interests which incite to act, find their expression in the complaints of the patient that he would like to act, but that he cannot will himself to act.

The painful effect of the concrete idea impelling to a voluntary act, due to contrasting ideas arising out of the greatly diminished sense of self, consciousness of defective power, psychic powerlessness, and the possibility that an idea may be sufficient to prevent success, cause the patient to vacillate between impulses and inactivity, expressed clinically in the vacillation and want of decision that characterize such patients.

The fundamental character of melancholia is that of absence of energy: passiveness. However, in such cases, at least episodically, a very stormy, violent activity, going even to the extent of *furor*, is possible. This is explained by the fact that temporarily the inhibition is overcome by intense emotion.

Other Nervous Symptoms.—In all melancholics at the beginning and at the height of the disease sleep is interfered with. It may be absent entirely or disturbed by frightful dreams and frequent awakening; or the patients feel that though they sleep they are not refreshed and strengthened as others are by normal sleep.

Headache is frequent, especially in the anemic. The patients often complain of a feeling of emptiness or pressure in the head, partly due to paralgias, partly as allegoric expressions of the psychic inhibition. General bodily feeling is disturbed; the patients feel tired, depressed, uncomfortable; and this diminution of vital energy finds its classic expression in the relaxed attitude; in the diminished duration of muscular activity; in the hesitating movements and slow

speech; and in the atonicity and weakness of the muscles. Besides the psychic elements (diminished self-confidence, etc.) here operative, this weakness of innervation seems to depend upon disturbed vital sensibilities and altered muscular feelings (heaviness, tenderness).

Sensory disturbances are often present. Paresthesias and anesthesias are more frequently met than paralgias, hyperesthesias, and neuralgias; and they aggravate the emotional condition, induce affects, and favor the occurrence of allegoric delusions. The secretions are diminished, as are all the instinctive impulses.

This is especially noticeable with reference to food, which not infrequently is positively refused. Along with delusions and errors of the senses as a cause, frequently the refusal of food is due to want of appetite and constipation as physical causes.

Too, even though food is not refused, the state of nutrition is much reduced. Progressive loss of weight and anemia are always observed, and in part may be referred to the involvement of trophic nerve-centers. The disturbance of vasomotor innervation is important. In the majority of patients the arteries are contracted. The pulse is small and the artery feels like a wire.

The phenomena due to this condition, aside from the arrest of the secretions, are lessened *turgor vitalis;* dry, hard skin with scaly desquamation; cold extremities, with possibly venous stasis and edema. Thus the patients look much older than they actually are. The temperature is usually subnormal; respiration is superficial and incomplete, even though quickened by the emotion of fear. The pulse-rate varies; at the height of apprehensive excitement it is decidedly increased.

Melancholic insanity manifests itself clinically in two definite forms, which may be called *simple melancholia* and *melancholia with stupor,* and they demand separate description.

I. Simple Melancholia.

The milder cases of melancholia are those in which the symptoms of mental inhibition are essentially psychic, due to a conscious painful mental process, and not organically induced by arrested activity in the psychomotor nervous paths, shown in its extreme degree by disturbance of muscular innervation (tetany, catalepsy). In these cases, too, there is not deep disturbance of consciousness. The inhibition in the emotional life shows itself in anesthesia with despair; in the intellectual life, as painful obstruc-

tion to the processes of thought in all directions; in the will, as distressing incapacity to decide upon an action, reaching even to the extent of complete arrest of voluntary acts (*comp.* page 93). The necessary result is a profound diminution of confidence in self.

Since the consciousness of the patient is a constant source of pain, and since the patient is a martyr to emotions and thoughts of threatening danger, which constantly maintain and intensify the painful state of emotional strain, his position becomes proportionately more painful, since he feels incapable, or at least not capable at all times, of performing the act that will deliver or save him.

The fundamental manifestation of the disease-picture is passivity: a distressing arrest of psychic activities. The passivity of melancholics may temporarily reach a degree where there is complete arrest of the psychomotor activities. Not merely acts, but even speech and movements of locomotion then become slower or difficult, and occur only in obedience to intense and repeated external stimuli and necessity. They are later only begun and not completed, until finally every motor act has become impossible (passive melancholia).

These cases, in which evidently the psychic inhibition is increased and complicated by augmented organic (molecular) resistance in the voluntary paths, constitute transitional forms to the severer forms of melancholia with stupor, in which consciousness is also troubled and the patient sinks into a cloudy mental state.

Except when episodically or in the transition to stuporous melancholia such states of complete mental inhibition occur, the consciousness of the patient suffering with simple melancholia is not more profoundly disturbed, even though it be filled by painful images and ideas.

Thought is interfered with and limited, but judgment is possible, in contrast with stuporous melancholia, in which there is a state of delirious dreaming with spontaneous delusions—for example, like those that occur in the delirium of fever or intoxication, and which undergo no further combination and elaboration.

Owing to the fact that the patient suffering from simple melancholia is capable of drawing conclusions, there is the possibility of the creation of delusions, and of their further systematic combination and logical valuation. The passive attitude of the patient may at any time change to a condition in which the patient is continually excited and active, and he obtains relief by expressing his mental pain and state of emotional tension in the most furious way in crying, wringing his hands, constant movement (melancholia errabunda), and even in destructive acts (agitated or active melancholia).

The cause of this state is not to be sought in increased readiness in the transformation of ideas into motor impulse, as is the case in mania, but in the enormous force with which the motor impulse is present in consciousness, which enables it to overcome all inhibition.

The fact is that these agitated melancholic states form only the height of the general disease-picture or are episodic phenomena in the course of (passive) melancholia. These affect-like outbursts of despair, which may temporarily overcome the classic inhibition of the melancholic, arise out of the painful mental state, which temporarily may become unbearable, and which depend upon psychic anesthesia, hyperesthesia, inhibition of thought, imperative ideas, lack of energy, and also complicating neuralgias, perversions of bodily feeling in general, precordial distress, frightful hallucinations, and delusions. In such imperative psychic states suicide is near. Analgesia facilitates the act. Frequently, especially under the impelling influence of precordial distress, there are destructive acts directed toward others. Psychic dysesthesia and anesthesia favor them.

During such paroxysms the patient in violent agitation resembles a case of furious mania; indeed, he may surpass the latter in destructiveness. As a rule, by inexperienced observers these cases of depression with continued excitement are diagnosticated as furious mania, although, between the destructive impulse of the maniac and the motor activity of the depressed, dependent upon painful states of consciousness, there is an essential difference.

In active melancholia there may be even the rapidity of ideas called the flight of ideas; but here this phenomenon has entirely a different character from the flight of ideas that occurs in mania, as Richarz has cleverly pointed out. In spite of all possible rapidity in the flow of ideas, the delirium of active melancholia is still monotonous, painful in content, and moves in the narrow circle of melancholic emotions, and is but a constant variation of the same theme.

The power to form a series of ideas with continued and infinite associations is wanting here, in contrast with mania, in which association of ideas is infinitely facilitated.

The ideas of the melancholic are only fragments of chains of thought. He is unable to finish the train of thought commenced, which constantly escapes from him, and he is constantly forced back to begin again. For this reason such patients complain of the constant painful resultless impulse to think; of the impossibility of continuing a train of thought and carrying it to its logical conclusion; of the emptiness of consciousness in spite of the fact that it seems to be overfilled.

It is therefore with a certain amount of justice that Emminghaus regards this condition as an overpowering imperative idea.

Simple melancholia is decidedly the most frequent form of mental disease. It presents clinically great variety in the grouping of the symptoms and the intensity of the disease. From this stand-

point essentially three degrees may be distinguished, for a case may pass through them all or end at any one of them. The mildest form of the disease may be called:—

(a) Melancholia without Delusion.

The disease-picture is limited to anomalies of the feelings and will, with disturbance of thought that is merely formal. There are neither delusions nor errors of the senses (hallucinations and illusions). This mild form of melancholia is only exceptionally observed in institutions for the insane, but it is extremely frequent in private practice. Often it long escapes the observation of the laity, as well as of physicians, for the patient is able to preserve an appearance of calm and reason.

To be sure, the somber character, the irritability, the depression, and the change from the usual manner of thinking and feeling are remarked; but these are explained or attributed to external causes, and the patient who does not wish to appear ill gives all manner of excuses for his carelessness and laziness and his neglect of customary duties. Thus, often for a long time, the true mental condition remains undiscovered until aggravation of the malady, or some act of violence arising out of the unbearable painful state of strain, reveals it. The ordinary medical diagnosis, overlooking the psychic anomaly, is frequently limited to anemia, chlorosis, hysteria, neurasthenia, etc. The disease does very frequently rest upon this physical and neurotic foundation, especially in connection with puberty (homesickness) and also in hypochondriacs, neurasthenics, and constitutional neuropaths. When it is dependent upon this hereditary foundation, it is not infrequently associated with imperative ideas (murder, suicide, fire), and also with somatic, neurotic, and especially sensory functional disturbances (paralgias, neuralgias). In these cases the disease is protracted, of graver prognosis, and there are transitions to general degenerate constitutional melancholia—*folie raisonnante* (*vide* "Psychic Degenerations").

CASE 6.—Melancholia without delusion due to chronic intestinal catarrh and neurasthenia.

Physician, aged 31, married, came asking advice about an abnormal state of feeling. His father was given to drink from his youth; his vice interfered with the happiness of the family, and cast a shadow over the patient's youth, who suffered much from the harsh treatment of his father, and he attributed his apprehensive, retiring character to this. He was neuropathic, emotional, blushed readily, was easily embarrassed by this, and on account of it was often the object of ridicule by his companions.

In the winter of 1863 he contracted a gastro-intestinal catarrh by taking cold, which he neglected, and which became chronic and still existed at the time of the beginning of his mental disease. The patient became a medical student, studied hard, and during vacation was forced to help his drunken father in his practice. After having passed his first examination, he was forced to take up his father's practice, who had had an attack of apoplexy. Soon after, his mother fell seriously ill. Along with the care of his patients, his practice, and his struggle for daily bread, the patient continued to study hard at night. This aggravated the gastro-intestinal trouble. The patient noticed pus in his dejections, recognized that his intestinal disease had finally gone on to the development of ulcers, and he became hypochondriac and feared intestinal perforation. In spite of all obstacles he passed a good examination. He was forced immediately to practice. His father recovered, and resumed his excesses. This caused much trouble and care. In the fall of 1873 the patient became engaged. A rich land-owner tried to turn his *fiancée* against him. He was reported to be a drunkard and epileptic. This often depressed him extremely.

After having been engaged two years his *fiancée* was no longer contented with the place where he lived. There were reproaches. The patient abandoned his good practice with heavy heart, to seek a new one elsewhere. On account of an unsuccessful operation for hernia he fell under the suspicion of an unkind colleague. The intestinal trouble grew worse; moodiness, hypochondriac depression, constipation, disturbances of digestion, and headache induced the patient to come to Gratz for advice. He attended the psychiatric clinic. In all the lectures he found explanations of his condition and the sad prospect of becoming insane. There was also an unpleasant letter from his *fiancée* (end of 1874). The patient became profoundly depressed, sleepless, had precordial distress, vertigo, ringing in the ears, and headache; nothing appeased him and he gave himself to thoughts of suicide. His *fiancée* became reconciled. In May, 1875, he was married. The patient hoped to recover, but on the wedding journey his trouble became aggravated. In his psychic anesthesia he felt that he could not love his wife. He reproached himself with having made her unhappy, and at the same time he feared to become insane, and had violent attacks of disgust of life. The patient tried opium (0.05 to 0.15 gram) twice daily. His condition became unbearable; he could take care of his practice mechanically as far as was necessary, but he was without pleasure in work or in life, and he sought relief from his mental pain in prolonged outbursts of weeping.

The psychic depression was always most marked on waking in the morning. He felt tired, depressed, reproached himself with having so lightly married, and thus brought unhappiness on his wife by his mental breakdown. Later he began to fear that he had transmitted to his child the seeds of his disease.

At his examination on December 6, 1875, the patient was disturbed and anxious. He complained of headache and pressure, as if his head were in a vise, and felt ill and depressed. Cathartics were regularly required; digestion was disturbed and the tongue coated. The patient has a congested appearance; the pulse was small, 84; extremities cool. He cried easily, and was without courage and pleasure, and shy of people; his future seemed to him dark.

His diet and bowels were regulated, and baths and cold rubbings prescribed. Opium was ordered; and since he could not support injections on account of his irritable skin, and his stomach could not bear the remedy, it was administered in suppositories of 0.25 to 0.3 gram, in the form of the aqueous extract twice daily.

His condition improved immediately. The patient was able to work more readily and to control the dark thoughts of the future and suicide. However, as soon as the effect of the opium wore off, he again had painful feelings of unrest, disgust of life, terrible depression and apathy, ringing in his ears, headache, and anxious feeling of pressure, as if his brain were too large or his skull too small. Too, simply a fault of diet, bad weather, attempts to occupy himself mentally, or study of psychiatry immediately induced aggravation of his condition with precordial distress and impulse to suicide. He could only exist with the aid of opium; but even this comfort made him anxious, for occasionally he attended the medical society and heard the morphine habit discussed. Sometimes better, sometimes worse, his condition depending essentially upon the state of his gastro-intestinal tract, he passed the summer of 1876. A sojourn in the mountains, with a visit afterward to the seashore, and the continued use of opium, which was increased up to 1.0 gram daily, finally brought about a favorable change. The gastro-intestinal trouble disappeared and psychic depression diminished. There were times when the patient could look into the future with hope, and life no longer seemed to be a heavy burden. He long remained very emotional and affected by emotional excitement; slight errors of diet and mental effort immediately caused a return of painful depression, and he then felt mentally uncertain and depressed, especially in the morning, when he became tired of life. Opium was gradually withdrawn, and he could get on without it.

In the course of the year 1877 the last symptoms of the disease disappeared. His expression became free, the former state of nutrition was re-established, and pleasure in life and work returned.

This recovery, obtained with so much difficulty, was subjected to a strenuous test, for his wife died, and his child was specifically infected by a nurse. The recovery, however, was maintained.

(b) Melancholia with Precordial Distress.

Very frequently in the course of melancholia without delusions the symptom-complex of precordial distress arises temporarily, especially during the early morning hours; or it may be more protracted and occur at the very beginning (precordial melancholia). In the latter case it is usually a form of disease that is acute or subacute in its course. Precordial distress is one of the most important and frequent subsidiary manifestations of melancholic states. Whenever it occurs, it is a very grave complication, since it is dangerous to the life of the patient or to others on account of the terrible increase of mental pain and tension, and the impulses thus induced to commit the act that will bring relief or salvation. Such patients must never be left by themselves. Precordial distress is the essential

factor in melancholia that forces the patient out of his passivity, renders him furious and agitated, or drives him to despair, depending upon the violence and suddenness with which the fear enters consciousness. An intense and powerful outbreak of precordial distress may cause temporary clouding or even suppression of consciousness, and in a violent and convulsive way induce acts as a reaction to the undefined fear. This motor crisis, as the expression of an unbearable state of mental tension, is ordinarily called raptus melancholicus (*comp.* page 210). This may arise out of the deepest state of passivity in a melancholic.

Not infrequently the actual attack has been preceded by aura-like states in the form of depression, irritability, headache, vertigo, neuralgic and paralgic sensations.

The attack reaches its acme with a violent increase of intensity when fear enters consciousness. All psychic processes (apperception, association of ideas, reproduction) are disturbed, or even prevented by the occurrence of the attack of fear. The disturbance or absence of apperception awakens the idea that the world is merely a shadow; that all things have been destroyed; thought is for the moment entirely suspended, or there is only a confused painful, uncontrolled series of ideas, in which desultory frightful hallucinations, delusions of general annihilation, destruction of the world, or possession by the devil, occur. Consciousness is deeply disturbed, and there may even be temporary absence of self-consciousness.

Depending on the intensity of the attack, the motor sphere presents the affect of despair (tearing the hair, destroying the clothing, destructive acts, murder, suicide, wild destruction of everything that falls into the patient's hands). The motive for this lies in the ill-defined impulse to overcome the state of psychic tension, and thus the analgesia makes possible the most frightful self-mutilations (Bergmann's patient, who dug out his own eyes), and psychic anesthesia leads to the most frightful acts of violence toward others. At the height of the condition, the wild destructive acts of these unfortunates are like true psychic convulsions.

Along with these psychic symptoms there are remarkable disturbances of respiration and circulation. The respiration is superficial and frequent, and the heart's action is accelerated and irregular, the pulse is small and quick, the skin cool and pale, and the secretions are suppressed during the attack. Toward the end of the paroxysm there is usually a profuse perspiration. The symptoms of disturbed circulation justify the assumption that a sympathetic neurosis (vascular spasm) is the cause of the attack.

The attack ceases suddenly, and its course may be compared graphically to a rapidly rising and falling curve.

The fear passes off, and the patient breathes as if he had awakened from a terrible dream, and feels relieved. According as the attack has been severe or not, memory of the events is wanting or only summary. The duration of the condition is from a few minutes to half an hour.

CASE 7.—Chronic melancholia, with raptus melancholicus, due to exhausting causes.

P., aged 57, female peasant, was admitted to the asylum September 10, 1873; of healthy family and having had no diseases, she was married at the age of 19, and had had ten children when she was 40 years old. The rapid succession of births, the continued lactation, hard work, bad food, and struggle for existence reduced her physical strength. From year to year she grew weaker and thinner, and work became constantly more painful. In 1861 she fell sick with typhoid fever; her convalescence was prolonged, because she had to resume work immediately and her food was insufficient. From this time there was great irritability, sensitiveness, and anemia. The patient stated that thereafter every winter she had an attack of depression lasting several weeks. Violent attacks of melancholia occurred in 1865 and in 1868, said to have been the result of fright and emotional excitement. At that time she was sad, avoided work, anxious, afraid, and thought she was followed, condemned to hell, and that her future was filled with frightful sufferings. The ordinary treatment of the country physician where she lived was applied in the form of purgatives, the application of irritating ointment, and similar things, as result of which the patient was still more physically enfeebled, and her mental condition aggravated. The state of anxious excitement and the delusions arising out of it passed off in time, but the patient remained sad, depressed, and irritable, and took no pleasure in work or life. She slept badly, had little appetite, and was badly nourished and anemic. In March, 1873, there was still further reduction of nutrition, and edema of the feet.

Her habitual mental depression quickly increased to a decided degree. Soon, on waking in the morning, she had attacks of horrible distress in the region of the heart. She felt as though a great stone lay on her. Then she broke out in perspiration and moved wildly about. These morning attacks of distress became more and more violent, until she lost her senses. She then thought that she was in hell, and she felt as if she had been thrown down from a great height and was floating about in the air. Everything she saw was fiery red or white. She thought that the world had come to an end, and by her fault, and that it would soon be her turn. At the same time she felt a horrible confusion of thought, in which her ideas became completely mixed. At the height of the attacks of distress she was disgusted with life and impelled to destructive acts. Driven by despair, she then rushed about the room, biting and striking others and destroying everything that fell to her hand; this brought her relief. In these attacks, which lasted until noon, it was customary to shut her up in a dark room and tie her.

During the afternoon she became freer of fear, and in the evening she felt no cardiac oppression. During the period of relative freedom she was simply depressed, had no feeling of pleasure, and could not pray.

The patient is of medium size; the brow low and narrow. There is no subcutaneous fat. The patient is very anemic; the heart-sounds are weak, but pure; the pulse small and easily compressed; and the vessel-walls show but slight tension. No vegetative disturbances. The patient was given rich food, wine, iron, and treated with injections of the aqueous extract of opium (0.15 gram twice daily). The opium had an actually specific effect upon the distress and attacks of excitement. The distress occurred only in the morning on awaking, and soon became only a feeling of moderate oppression. The general state of nutrition improved and hope returned. She became mentally freer, full of hope, and could work. Gradually the opium could be dispensed with. After it had been suspended for some time there was a recrudescence of the melancholia, which disappeared in a few days when the opium was resumed. Later attempts to withdraw the medicine showed that it could not be dispensed with, because of distress and sleeplessness; but finally the patient was able to get on with doses of from 0.02 to 0.03 gram. With this she felt physically well, only slightly depressed, and took pleasure in work. On September 30, 1874, the patient was discharged, with very slight traces of painful depression present, and was instructed to continue the internal use of opium for a time.

(c) Melancholia with Delusions and Errors of the Senses.

In the course of melancholia delusions and errors of the senses often occur. They develop gradually in the course of *melancholia without delusion,* and represent the acme of the development of the disease, or they occur at an early period after the beginning of the depression. This is the rule in acute and subacute cases. Since in contrast with the delusions of primary hallucinatory insanity and paranoia the false ideas of melancholics are almost always the product of efforts to explain the abnormal state of consciousness, it is usually possible to trace the delusions to their source: *i.e.,* to the fundamental elementary psychologic disturbance.

Thus, the profoundly changed feeling of self in the patient, which depends either upon consciousness of the inhibition of feeling or upon ideas and impulses, and which finds its clinical expression in depression and want of self-confidence, leads to the delusion of being ruined, a beggar, or forced to die of starvation. The psychic dysesthesia causes the external world to appear in a hostile light, and gives rise to ideas of persecution and threatening danger. The feeling of inhibition and of being overpowered, in individuals of limited mental power, leads to the delusion of being under the influence of the powers of darkness—of being bewitched. Psychic anesthesia, which destroys all ethic and humane feelings, leads to the delusion that all human attributes have been lost, and of being changed into an animal. On the religious side, since comfort in prayer is lost and all relation with religion is felt to be destroyed, the delusion of being rejected by God, of having lost eternal happiness,

or of being possessed by the devil, easily arises. In the highest degrees of psychic anesthesia, when sensory perceptions no longer have any intensity or emotional coloring, the external world seems to be merely a shadow, which awakens distressing delusions of general and personal destruction.

Precordial distress and anxious emotional states of expectation in general are very important sources of delusions. They give rise to the delusion that some danger actually threatens. This may be individually translated objectively into ideas of imaginary persecution, threatened death, or loss of fortune. At the same time, on account of the loss of confidence in self, the patient easily develops the delusion of being a sinner or a criminal meriting such punishment. As a further motive there may have been previously an actual infraction of the law, or some harmless previous act or neglect, which to the hyperesthetic conscience appears to be a crime.

Too, abnormal sensations in the domain of the sensory nerves (paralgias, neuralgias, anesthesias) and anomalies of taste and smell may be the cause of the creation of allegoric false ideas. Errors of the senses constitute another abundant source of delusions. All the senses may be affected simultaneously and temporarily place the patient in an imaginary world.

A patient plunged into an anxious state of emotional apprehension hears voices that announce a threatened catastrophe, death, imprisonment, or damnation of his soul. The external world appears to him hostile, and insignificant words or noises change for him into threats, insults, ridicule, or mocking laughter.

Too, the visions of such patients are frightful. They see themselves surrounded by ghosts and devils; the executioner, who waits for them; murderers, who threaten them. Gustatory hallucinations lead to the delusion that there is poison in the food or that it is unclean. Olfactory hallucinations bring up the idea of being surrounded by corpses, or being in the sulphur fumes of hell; neuralgic and paralgic sensations give origin to the delusion of being martyred or persecuted by evil spirits.

By the addition of delusions and errors of the senses, the passivity may be still further intensified in accordance with their content. For example, the patient hears voices that say that if he move he will be lost, or he sees himself surrounded by abysses; or the passivity may be changed to a reaction of despair and manifest itself in raptus melancholicus or in agitated melancholia.

CASE 8.—Agitated melancholia; good result from treatment with opium.

K., wife of an official, aged 30, admitted May 14, 1875. Father was choleric. Her mother and her sister, as well as her brother, were intensely

neuropathic persons. The patient, whose skeleton was slightly rachitic from childhood, was feeble, neuropathic, and very impressionable. She was a sleep-walker, suffered with nightmare, had very intense dreams, and while still a young girl was subject to imperative ideas, such as that during sleep she might strangle herself, as a result of which she carefully put all bands away; she also felt the impulse to jump out of the window.

At 13 puberty came on with chlorotic and hysteric symptoms. Her excited imagination and exalted nature became intensified. She wished to become an actress, and tried it; but her nervous excitement made it necessary for her to abandon the profession. She was married at 25. Her happy marriage was two months later disturbed by the suicide of her mother-in-law. Evil tongues attributed this to the patient, although an incurable disease had driven the mother-in-law to the act.

The patient became pregnant; to the trouble arising out of gossip was added sorrow at the death of two friends of the family. In February, 1871, her child was born with difficulty, and had harelip and cleft palate, and, with sickness, added much to the mother's care.

In 1873 the sensitive wife learned that her husband's relatives spoke disparagingly of her, and said that he might have made a better match. This remark made a deep impression on her, and she sought to find out whether it was well founded and whether her husband was actually in sympathy with her. She became shy and wrapped up in her depressing thoughts.

In January, 1875, she fell sick, with her husband and child, of diphtheria. In February she had acute articular rheumatism. After that she was feeble and anemic. Her nervousness was increased by repeated thefts in her house.

The patient felt fatigued and still excited. She became suspicious and easily hurt. She felt more and more unworthy of her husband, and lost pleasure in her child and life; thought that her husband had been made unhappy by her, and that she must make the sacrifice and commit suicide in order to free him. Still she felt too weak to perform the deed.

She was sleepless at night, and precordial distress, painful palpitations, and loss of appetite came on. She could see no one, and kind advice hurt her. She felt despised, confessed that she was a thief, the worst of mothers, a disgrace, not worthy to be on earth, and unworthy of the best of all husbands. Only death at the executioner's hand could atone for her crime. When her husband forced her to go out she noticed that everybody stared at her and expectorated before her. She thought it her duty to rid her husband of herself. She tried to escape and drown herself; to stab herself with a carving knife; the sad expression of those about her she took to be contempt. Because the physicians would not give her poison, she tried to strangle herself. When she was not successful, she broke in the closet for arms or a dagger with which to kill herself. Unsuccessful in this also, she threw herself against the broken glass and plunged a needle into her breast. Put in bed, she thought she saw the preparations for her execution in the next room; that she had been the cause of all the misfortune in the world. She greeted the physician, who dressed her wounds, as her executioner. When she was given something to drink, she thought she had drunk the heart-blood of her husband and child. Her journey to the hospital she thought was to her execution, and she believed that she first had to hang her relatives and then she would be executed.

On admission the patient was frightfully restless and in apprehensive excitement. She tried to strangle and bite herself, so that she had to be watched unremittingly.

She was profoundly overcome; anemic; pulse, 126; intercostal neuralgia; constipation. She complained of frightful fear; said she was a disgrace and a streetwalker.

Treatment with aqueous extract of opium subcutaneously (0.05 to 0.1 gram) twice daily brought sleep and calmed the excitement in a few days. The patient complained that the injections made her too cowardly to commit suicide, and yet that was her only way of escape.

The anxiety and painful apprehensive emotional state and the delusions based on these grew less intense. She declared then that she was a sinner, and demanded to be sent to a place of punishment.

As early as June 2d the patient became remarkably free and began to employ herself, to ask for her relatives, with doubts that they were alive. The genuineness of a letter from her husband was doubted. The patient ate and slept well. Her general condition improved and the pulse fell to 90. Toward the end of June there were indications of an understanding of her disease. A visit from her husband the 2d of July had a favorable effect, and she gained complete insight into her disease. With gradual withdrawal of the opium, convalescence continued undisturbed. On August 10, 1875, she was discharged recovered. Memory of her disease was like that of a horrible dream. She had only summary recollection of the height of the disease. The following taken from her recollections may be mentioned:—

"I was always expecting that they were coming to take me to my execution, and I heard horrible things. I thought that my child and my relatives had been whipped, and I heard the most terrible accusations cast in my face. I confessed myself guilty of everything and awaited my end at the hands of the executioner, since neither by beating my head, holding my breath, or stopping my mouth could I escape a disgraceful death on the scaffold. I thought I was branded by the injections, and I retained this idea, as well as that of my infinite unworthiness, a long time. Everything that was said around me I thought referred to me, and the noises of the pump at the spring I thought were occasioned by the erection of the guillotine. The cries of patients I took for the noise of the crowd that had assembled to shame and maltreat me on my way to the scaffold. The roaring and hissing in my head, as well as a cold feeling that sometimes came over me, I took for forebodings of desired death. Later I thought I had been given up by my husband and family, until finally insight came that all this was but the vagary of my overstrained mind and nervous system. The sight of my husband removed my last doubt."

Among the delusions of melancholia, it is practical and not without value to emphasize certain forms of delusions that are especially striking and frequently observed. The following clinical forms may be mentioned:—

1. Religious Melancholia.

A patient naturally religious that has fallen a victim to melancholia takes refuge from his depression and fear in prayer. The

failure to obtain the uplifting and comforting feeling that prayer formerly gave makes prayer seem ineffectual. The patient realizes this with horror, and falls into despair. He sees that he is abandoned by God, and has lost eternal happiness. He deserves this fate because he is a sinner, has prayed too little, and not honored God enough.

In the further course—especially in uneducated individuals, for whom the loss of heavenly grace is synonymous with falling into hell and the hands of the devil, as an expression of the elaboration of the delusional state—the subjects come to think themselves possessed by the devil (demoniac melancholia). Neuralgias, paralgias, cramps, especially frequent upon an hysteric foundation, prove that the vile body has been seized by the evil spirit. These sensations are allegorically interpreted. For example, intercostal neuralgia is attributed to efforts of the devil to tear out the heart. Anesthesia and paresthesia show that the heart has been removed and replaced by stone. Paralgic burning sensations in the skin and throat are interpreted as the flames of hell, etc.

Frequently the demoniac delusion is conceived with the first occurrence of a sensation (for example, globus, paralgia). Hallucinations aid (visions of evil spirits, odor of sulphur, voices saying "now thy soul is mine," etc.). At the height of demoniac delusions, and as a reaction, there may be outbursts of despair, raptus, or convulsions that are interpreted in the demoniac sense as a personality that has penetrated the body and controls its movements. The subsidence of the demonomania takes place usually through a stage of religious melancholia, which may finally end by passing through a stage of nostalgic melancholia.

Case 9.—Religious melancholia.

B., female, aged 28, single, teacher, was admitted July 31, 1875. Her mother is extremely hysteropathic. The patient was always nervous, easily frightened, sensitive, well endowed, but of retiring disposition. Aside from small-pox in her twentieth year, she had had no diseases worth mentioning.

In September, 1873, she was terribly frightened during the menses, which ceased immediately, and returned, after two months, profusely and with pain. At the same time she suffered with a feeling of heaviness and trembling in the lower extremities, cold feet, and fluxions to the head. In February, 1874, she was subjected to all kinds of excitement in becoming engaged and giving up her profession. She had pains in the back of her head and disturbances of circulation (fluxions to the head and ice-cold extremities).

In March deep mental depression was added. The patient complained of sad thoughts, became sleepless, and the world seemed to her empty. She could take no pleasure in anything nor pray. This psychic anesthesia was referred to unworthiness in confession and communion, and she looked upon

her condition as a punishment by God for her triviality. She thought she was damned by God and threatened with loss of her reason. This discovery was followed by outbreaks of desperation, which later changed into silent resignation and despair in brooding over her lost happiness and soul. At times, and regularly during the menses, there were attacks of fear in which she heard that she was damned and cast out, and she cursed herself, and those about her appeared to her in changed form and color, especially like unto the devil. She made attempts at suicide.

She broke her engagement. She was so irritable with her parents that she broke out in anger against them if they did not leave her in peace; sleep and nutrition suffered. Her treatment was most unfortunate, for the family surrounded the patient kneeling in prayer. Exorcisms were practiced; a priest pretending to know something of psychiatry advised and influenced the patient, took her about in the country, and she was treated homeopathically.

At the time of her admission, the patient, of medium size, was much reduced in general condition, profoundly disturbed, with distorted features and lowered head. The pulse was small, the extremities cool, the breathing frequent and superficial. Her hands trembled, and the tongue was coated; no neuralgia; uterus small and in slight anteversion. The patient was in a state of great unrest and fear, and asked that she should be left in peace, saying that her body was healthy, but her soul dead. In her great contempt for self she wished no longer to be called by name, but by number. She gave herself up to infinite self-accusations. She had failed in confession, had concealed her pride and vanity; sinned in evilness of spirit and sinfully partaken of the sacrament; shamed God and committed divine theft; now her soul is to suffer until her body dies. It is to be gradually eaten away until the day of atonement. Her soul burns like a red-hot iron in her body. Divine judgment is on her. The soul's anger has broken forth in her. She lives in constant hate and anger; cursed be the day she was born! Every breath and every pulse-beat are her sin and punishment.

The mental condition at the height of the disease will be best illustrated by an extract from what she wrote to the physician: "You looked for an insane person in me in vain. Unholy and self-confessed, the most frightful divine judgment represents the condition of my guilty punished soul. I am and remain the only being of the whole human race that has from childhood transgressed all human and divine laws in unnatural mental perversion and wickedness, and I should be thrown into the deepest abyss. Fear of humanity and false shame pushed me down farther and farther; so that, instead of grace and invisible divine help, I received only signs of the increase of sin and punishment. With the aspect of childish innocence I became a godless monster that so long committed divine theft that the measure became full; that now the punishment and suffering of the soul and the feeling of eternal punishment and eternal death are so great that I can no longer conceal them. Helpless and abandoned, since in secret I have sacrificed only to vice, now my cursed body has become helpless and always dominated by the law of punishment. Salvation has become forever impossible, for all the necessary humanity has been taken out of my body and soul. I wish to remain here (asylum) in order to pass my earthly life where there are so many unfortunate and self-accused punished beings. All is lost on me. Give your medicines to those who ask for them and who need them; but for me, who have destroyed the happi-

ness of my relatives and myself, show me some dark place of despair where I may remain until my frightful body has gone into decay. I need no care and attention, for the godless can only be looked on with repugnance, and escape from eternal judgment is impossible."

The psychic hyperesthesia and frequent attacks of precordial distress made treatment with opium seem desirable. Lukewarm baths, rubbing, and iron were prescribed.

When subcutaneous doses twice daily of 0.15 to 0.2 gram were reached the patient became quieter, more resigned, slept well, and her general condition improved. She began to wash herself again, and have care of her toilet. It was even possible to distract her by occupation. Her delusions became less apparent, and her outbreaks of despair which recalled them, and in which she demanded to be put in prison and doubted her reconciliation with God, occurred less frequently, and finally only at the time of the menses. The menses occurred always with pain in the back and abdomen. There was frequently, too, intercostal neuralgia, which, however, was not mentally interpreted, with boring pain in the occipital region and feelings as if the cranium were wanting, though without any demonstrable anesthesia.

In the course of the year 1876 decided improvement continued. The patient was still for a long time distressed of expression and depressed, not wishing to mingle with others. She had a horror of religion and her relatives, and doubted the grace of God; but finally it was possible to bring her into relation with her relatives. The patient did services for other patients, and it was possible to bring her into social relation with others. She had recovered physically at the end of 1876, and opium had then been withdrawn for a long time. At the beginning of 1877 she showed insight into her disease, but she still had great aversion for church and religion, and was afraid of returning into society. Finally this last trace of disease disappeared. She returned to her family recovered, April 2, 1877, and she has become reconciled with God and the world.

2. Hypochondriac Melancholia.

In many cases of melancholia the attention of the depressed patient is attracted and directed to his own body by disturbances of general sensibility. Then the patient readily finds the reason for his depression in his bodily sensations, though these are only accessory symptoms, and not causes of his melancholic depression. Thus, just as in other varieties of melancholia, delusions arise out of attempts to explain the abnormal processes in consciousness, which, however, in this case are not brought into false relation with the external world, but become delusional conceptions of physical conditions and processes. This hypochondriac aspect of the disease-picture of melancholia arises very easily whenever, as an underlying cause or complication, there is gastro-intestinal or sexual disease. Another common form in which hypochondriac melancholia is clinically expressed is *melancholia syphilophobica.* The cause lies in former or present peculiarities that may be quite harmless. However, it is worthy of note that this form of mental disturbance is fre-

quent in those that are infected or in whom infection is suspected. In such cases luetic chlorosis or anemia due to a course of mercury and iodides seems etiologically important.

As a variety, *hydrophobic melancholia* may be mentioned. The patient explains his disturbance of general sensibility and apprehensive state of mind by the delusion of having been infected with rabies, and he lives in the fear of an outbreak of this terrible disease and of communicating it to others. At the height of apprehensive excitement there may be reflex cramps and inability to swallow. A former dog-bite or some harmless accident may be the cause of the development of this delusion.

II. Melancholia with Stupor, or Melancholia Attonita or Stupida.

Melancholia with stupor is a grave clinical form of melancholia characterized by profound disturbance of consciousness, complete inhibition of mental activity, with the addition of peculiar psychomotor disturbances.

In this disease the patients are quite absorbed in themselves, without will, and apparently completely separated from the external world. Superficially they are like dements, and, in fact, early observers, with the exception of Baillarger, mistook this condition for primary dementia and states of stupor. Baillarger first recognized the melancholic nature of this malady by proving that in the disease-picture there were melancholic delusions, and by showing that the apparent lack of will of the patients was but an intense degree of psychomotor inhibition.

Very rarely this disease-picture develops primarily, and when it does it seems to be dependent upon an especially weakened or vulnerable brain (typhoid, puerperium) affected by a sudden and intensely acting exciting cause (emotional shock, fright, etc.). As a rule, however, it appears secondarily, and is gradually developed out of a simple melancholia, for the most part following upon a stormy outbreak of apprehension or despair or some act of violence.

The disturbance of consciousness in these patients, owing to the absence of the possibility of reaction, seems much more profound than it actually is. An attentive observer sees in the wrinkling of the brow, the winking of the eyes, the apprehensive look, an intention to draw away which, of course, is expressed only in a more powerful contraction of muscles in the patient otherwise immobile, the existence of apperception of the external world.

Too, the fact that the patients have at least a summary memory for the events of the disease, sometimes even memory of minute details, proves that their stupor is not profound.

Naturally, only when these patients are able later to describe their feelings, in the period of convalescence, can notions of the inner psychic activities during this peculiar painful state of inhibition be obtained. Quite in contrast with a tabula rasa, these patients tell of the most plastic and horrible hallucinations and delusions to which they were subject: of frightful pictures of death-agony, execution, slaughter of dearest relatives, or destruction of the world. In severe cases, the inner life of such patients becomes a true nebulous state of consciousness, in which objective external impressions seem confused, shadowy, and hostile. A frightful, vague, empty fear which paralyzes all energy takes possession of consciousness and reason and makes motor reaction impossible; and the frightful consciousness of powerlessness to act and will increases the distress tenfold. In harmony with this state of consciousness the patients are fixed like a statue in one place, with anxious, astonished, or mask-like fixity of features devoid of reaction.

The attitude is bent, the muscles are strained and in slight flexion (tetany), which, when the passive patient is taken hold of, increases to enormous resistance that can only be overcome by the use of great force.

In rare cases the muscles do not show this rigidity and flexed attitude of the members. They offer no resistance to passive movements, but remain a long time in the position given them (cataleptiform state), without presenting, however, the phenomenon of *flexibilitas cerea*. In a very few cases, however, this does occur (catalepsy).

As a part of the general psychomotor inhibition mutism occurs.

Concerning the state of sensibility of these patients, a conclusion is difficult, since they cannot speak and are otherwise inhibited in their reaction. However, for the most part sensibility is retained, and only the expression of pain is interfered with. In a few cases there was temporary hyperesthesia; in a few others, and especially severe cases, there was central anesthesia. The heart's action is usually increased, the pulse small and rapid, and the artery wire-like. Turgor vitalis is wanting, the skin is dry and rough, and the patients look much older than they are. Respiration is slow, superficial, and thus insufficient; body-temperature is subnormal.

The secretions are lessened and the menses wanting. The general nutrition falls decidedly. There is passive resistance to taking food, which not infrequently makes it necessary to resort to forced feeding. Constipation is almost constant and often very obstinate. In severe cases with an unfavorable course Dagonet also observed

salivation. If the malady take an unfavorable course, then gradually the fixity of the features and the limbs diminishes, and there is relaxation, with only partial contractures to betray the former state. The patient dements, becomes constantly unclean, and the general physical condition improves. The pulse becomes slow, and there is coolness, cyanosis, and edema of the extremities.

The course is remittent with exacerbations. Periods of diminution of the inhibition, in which the patient goes about weeping and can communicate in words spoken with a low, uncertain, trembling voice, and in which there is also a certain amount of spontaneity, as in eating, alternate with periods of complete immobility and stuporous inhibition. Suddenly out of such a state of inhibition, in such patients, raptus-like acts of self-injury or violence toward others may arise. These usually occur when the patient has been disturbed in his painful passivity by efforts of attendants or by the administration of food.

The anatomic findings are anemia, venous stasis, and edema of the pia and brain. In protracted cases that have passed on to dementia there is also cortical atrophy. These changes, first appearing as anemia and later as degeneration of the psychic organ, depend upon profound disturbances of cerebral nutrition, primarily due to vascular paralysis, weakened heart's action, and hydremia.

Case 10.—Melancholia with stupor; tetany.

G., aged 22, lay brother in a cloister, of healthy family, fell sick in the middle of October, 1875, with melancholia and was brought to the clinic November 14, 1875. The patient had never been sick before. Owing to his preference for such a life, a short time before he had entered a cloister, but there had quickly found that he had deceived himself. In the middle of October he made himself remarked by his silence, his constant staring before him, and his unwillingness to work and eat. Since he was silent and apprehensive and refused food, he was brought to Gratz. On admission the patient was profoundly anemic and much reduced in general strength. He was of medium height, thin, and the cranium somewhat prominent at the sides, slightly rachitic; pupils dilated, reacting slowly; pulse very slow and the radial artery contracted; extensive intercostal neuralgia. Constipation. Consciousness is profoundly disturbed and dreamy. The facial expression is painful and fixed. The patient lies curled up in bed in a state of general tetanic contracture, the eyes tightly closed. He does not speak at all, except to say occasionally that he is forbidden to speak. Now and then he sighs. Respiration is superficial; skin dry, cool, and slightly cyanotic; patient offers great passive resistance. It is necessary to resort to forced feeding. The treatment consists first of rest in bed, iron, rubbing, wine, and nutritious food.

An attempt to overcome the contraction of the arteries with amyl nitrite has little success. The vascular spasm does not diminish, and the pulse from 54 rises only temporarily to 70. The patient remains in a state of profound

disturbance of consciousness and tetany. Only the painful expression and occasional sighs indicate the painful state of consciousness. Now and then the patient becomes apprehensive, restless, crawls under the bed or kneels near it, asking to be forgiven. Patient sleeps little, loses weight, and there is even decubitus over the sacrum. While during the daytime the patient was stupid and passive and refused offered food, in the course of January, 1876, during the night he got out of bed, wandered about seeking food, and greedily ate that which purposely had been left where he could obtain it.

In the beginning of March, 1876, with improvement in general condition, the patient became freer in mind and movement. He was still shy of others, still profoundly depressed, and begged often for forgiveness.

In April these melancholic symptoms diminished. The pulse became softer, fuller, and more rapid. He opened his eyes, began to speak and to occupy himself; he became clean and washed and dressed himself. He was still for a long time remarkably inhibited in movement, and stared before him dreamily. In May it was possible to examine him. The patient knew only that he had been apprehensive, sleepless, confused in his head, and feared to be killed on account of great sins. The period from his admission up to the end of March, 1876, he could recall but imperfectly, knowing only that he was very apprehensive and could not move. It seemed to him that he had slept during all this time. Convalescence progressed undisturbed, and at the end of September, 1876, the patient was discharged recovered.

The Course and Terminations of Melancholia.

The melancholic state occurring at the beginning of the various neuroses and psychoses as an intercurrent disturbance in the initial stages of a disease must be carefully differentiated from melancholia as a form of disease.

There is very frequently a melancholic symptom-complex as a prodromal manifestation in mania and as an intercurrent phenomenon in senile dementia and dementia paralytica; also in epileptics, hysterics, hypochondriacs, neurasthenics, and sometimes in paranoiacs. It is only melancholia as a form of disease that can be the object of special clinical discussion.

The course of melancholia in continuous, and subacute or chronic. Where its course is subacute, the disease-picture quickly reaches its height, and precordial distress, delusions, and errors of the senses are early developed. The disease-picture may for weeks or months manifest itself in the form of melancholia without delusion; the subsequent occurrence of precordial distress forms then another phase; until finally delusions, and frequently also errors of the senses, bring the disease to its full development. At this point the disease usually remains for months.

Melancholic insanity in all its stages shows remissions and exacerbations. These are partly due to organic and partly to psychologic processes. Remissions, if there be any, almost always occur in the afternoon and evening, and exacerbations occur in the earlier

hours of the morning. The reason for this is largely due to the fact that precordial distress usually diminishes in intensity during the course of the day.

The disappearance of the disease is gradual, not sudden—at least in chronic and essentially melancholic insanity. Remissions become more pronounced and enduring; sleep and nutrition improve. The patient begins to doubt the reality of his delusions and hallucinations, and the latter gradually disappear.

In rare cases of melancholia with stupor a disappearance of the disease in a few days has been observed, with manifestations which indicated restoration of normal circulation and probable reabsorption of edema. The duration of true melancholia is months or years.

When the innumerable slight cases that do not reach the hospital for the insane are taken into consideration, the prognosis of melancholia is favorable. Numerous cases of this kind remain at the degree of melancholia without delusion, or have in addition only precordial distress, and pass on to recovery without the occurrence of delusions or errors of the senses.

States of simple melancholia in transition to melancholia with stupor have a graver prognosis. This state of profound psychic inhibition easily passes on to actual mental weakness. This is still more to be feared in actual melancholia with stupor, which prognostically is to be regarded as the severest form; but in youthful patients, and with early and proper treatment, the results are frequently favorable.

In general, the forms of active melancholia that have a more subacute course allow a more favorable prognosis than cases of passive melancholia, though in the former cases, especially in elderly individuals, there is danger of exhaustion and inanition. Aside from termination in recovery, which takes place in about 60 per cent. of cases treated in insane hospitals, and aside from a fatal result, sometimes due to exhaustion, to colliquative diarrhea dependent upon venous stasis in the intestinal mucous membrane, to pulmonary tuberculosis caused by the profound disturbance of nutrition, and also in rare cases to progressive cerebral paralysis, termination in a state of mental weakness is to be mentioned. The terminal stage of melancholia that has not gone on to recovery may be either secondary delusional insanity or dementia. The last result is not infrequently the direct termination of melancholia with stupor, while in unfavorable cases of simple melancholia secondary delusional insanity is more frequently observed.

Therapy.

The following general principles for the treatment of melancholia may be laid down:—

1. Give the patient complete physical and mental rest. Remove all sources of irritation of the diseased brain, whether these be efforts to distract or encourage the patient, religious consolation, etc., remembering always that impressions that under normal conditions make pleasant impressions can only increase the mental pain.

This indication becomes more important, the greater the psychic hyperesthesia and the more acute the case. For the majority of melancholics rest in bed is the most important medical prescription and does the greatest amount of good. For melancholics with cerebral anemia, especially, there is no better means to quiet them.

2. Surveillance of the patient to protect him from himself and others from him. Every melancholic is capable of suddenly making an attempt against his own life, and every one is also dangerous to others. The watching of the patient must be continuous. The slyness and persistence of such patients in pursuit of their suicidal intentions is often astounding. Restraint by means of a camisole is no guarantee against suicide.

3. Care of the general condition and of the amount of food taken.

Sleeplessness, affects, and irregular eating with disturbed assimilation due to catarrhal affection of the alimentary tract predispose to inanition, exhaustion, and to tuberculosis when there is a predisposition to it. Therefore such patients must be given abundant food, easily digestible and rich in proteids.

This indication can frequently be fulfilled only with great difficulty on account of the tendency of the patient to refuse food. In order to oppose this rationally, it is necessary to discover its cause. The causes of refusal of food are various.

Sometimes it is simply catarrh of the mouth, stomach, or intestines, and proper treatment overcomes the difficulty. Frequently the cause is constipation, and proper treatment quickly attains the desired result. More frequently the cause is mental. In many cases, especially where the patients are naturally of limited mental endowment, the refusal of food is simply due to the impulse of opposition caused by the painful and hostile conception of the external world. If this state of mental opposition be ignored, as a rule resistance is overcome, or the patient can be sufficiently nourished by leaving food accidentally near him, as if it were unintentional, and thus it is possible for him to eat unnoticed.

In melancholia attonita the refusal of food is due to disturbance of apperception and general psychomotor inhibition. In such a condition the

patient would simply starve to death, because his bodily needs are not perceived, necessary ideas are not formed, and it is impossible for him to act. Under such circumstances not infrequently energetic scolding induces the patient to eat. If active interference be necessary, the resistance is usually easily overcome with a spoon or an invalid feeding-cup.

In certain melancholics who refuse food, refusal is due to religious motives, to delusions of sin or of need to do penance, etc. Not infrequently as a cause is the profound feeling of unworthiness, of no longer being worthy of food, and of taking it from the poor and more worthy; or there is a nihilistic delusion that nothing longer exists, that everything has been destroyed, or that the patient can no longer pay for anything.

In other cases, errors of the senses of taste and smell, and a consequent delusion of poison, of uncleanliness of the food, cause refusal of nourishment. In hypochondriac melancholia the cause of the refusal of food may lie in disturbed general sensibility and consequent delusions that the alimentary tract is obstructed, the body dead, the organs decayed, or the stomach gone. Sometimes the patient obeys voices which command him to refuse food, and less frequently the patient tries to kill himself by starvation. When delusions, hallucinations, or disgust with life are influential, it is frequently necessary to feed the patient by force.

4. Treatment, by proper means, of sleeplessness, which is very exhausting and favors the development of delusions and hallucinations. Morphine is of little service; chloral hydrate is more valuable, though it cannot be used freely for a long time. Opium is better, as are also sulphonal and trional. Assistance is given by lukewarm baths, especially when prolonged; mustard-baths and Preissnitz packs. In anemic patients, alcoholic stimulants, especially strong beer, have a good effect, and in such cases it is well to have the principal meal taken in the evening.

5. Use of symptomatic remedies approved by experience. The first of these are lukewarm baths of from 26° to 28° R. (90° to 95° F.), continued several hours, according to circumstances, and opium (*comp.* page 258). Opium is especially indicated in precordial and agitated melancholia; in cases due to anemia and alcoholism, and in the early stages of the disease and in females. The dose to begin with should be 0.03 gram twice daily, increased rapidly by 0.01 gram at each dose (*comp.* page 259). The favorable effect of the remedy when it is indicated is soon shown, first in hope and quiet. There is seldom indication of toxic effect, and the first constipating influence soon passes off. The subcutaneous administration of the aqueous extract of opium is the best on account of sparing the stomach and the certainty of the dose.

Congestive symptoms do not in themselves contra-indicate the remedy. The maximum dose cannot be stated. If for any reason

the subcutaneous administration is not possible, then the aqueous extract of opium may be given internally with sherry.[1]

The minute fulfillment of all hygienic demands is especially necessary in severe cases of passive melancholia and melancholia with stupor. Such patients must be kept constantly in bed, by which means stasis of the blood and unnecessary loss of heat are prevented.

The diet should be rich in proteids, but, owing to the condition of the digestive tract, mild. For this purpose milk and its preparations are most suitable. Daily care of the bowels is not less important, but drastics must be avoided. The insufficient respiration may require sinapisms and faradization of the muscles of the chest and of the diaphragm. If the heart's action is deficient, diffusible stimulants may be required, especially good old wine, and under some circumstances ether and camphor. If at the same time the pulse is spasmodically contracted, then amyl nitrite, or plenty of hot grog, hot brandy, and the like, may be useful. These remedies promote sleep better than any narcotic. The reduced activity of the skin may require stimulation by mustard-baths and washings with warm vinegar. Opium is of no service in these conditions; on the contrary, it is rather harmful.

CHAPTER II.

Mania.

THE fundamental symptoms of maniacal insanity are a change of self-consciousness characterized by a predominating pleasurable emotional state, and an abnormal ease and rapidity of thought which may become so intense that all control of the psychomotor side of the mind is wanting. In this respect mania is the exact opposite of melancholia. In mania, no more than in melancholia, can the emotional anomalies be exclusively explained by the changed activity of mental processes (here facilitated), though it cannot be denied that a decided increase of pleasurable feeling is found by the patient in the greater ease of thought and the removal of all inhibition.[2]

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[1] ℞ Aq. ext. thebaic., ... 0.6
Vin malaceus, ... 60.0
Aquæ dest., ... 60.0
Syr. aurant. cort., ... 15.0

M. Sig.: Dessertspoonful at a dose. (Dessertspoonful equals about 0.02 gram of thebaic.)

[2] Mendel declares the emotional anomaly to be a subsidiary, secondary symptom dependent upon the content of thought, the greater ease, and the

Both these fundamental phenomena are to be regarded as co-ordinated, and probably their foundation lies functionally in facilitated expenditure of vital forces, and anatomically in a greater supply of blood to the psychic organ. In mania, also, two essential disease-pictures may be distinguished, differing only in degree and frequently passing one into the other. The milder form is maniacal exaltation; the severer form is furious mania.

I. Maniacal Exaltation.[1]

Psychic Symptoms.—The content of consciousness is pleasure and psychic well-being. It is just as independent of events in the external world as the opposite state of mental pain in melancholics, and therefore can be referred only to inner organic causes. The patient revels in pleasurable feelings, and after recovery states that never in health did he feel so uplifted or so happy as during his disease. This spontaneous pleasure receives powerful stimulation from altered apperception of the external world; from the realization of the facilitated activity of thought and will; from the intense accentuation of ideas with pleasurable feelings; and the comfortable state of general feeling, especially that derived from the muscles (increased muscle-tone). These influences cause the joyful emotion to be intensified temporarily to joyful affects (unrestrained joyousness, wantonness), which find their expression in singing, dancing, jumping, and silly jokes.

Along with the disturbance in content of emotion there is a formal derangement—increased excitability (psychic hyperesthesia), manifest in the fact that sense-perception and reproduced ideas are accompanied, not by mere sentiment, but by affects which, owing to the predominating fundamental emotional state, are principally gay; and they occur with abnormal ease. Necessarily on account of this

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greater or lesser obstacles which the impulse to movement experiences. He defines mania therefore as a "functional brain disease characterized by abnormal rapidity of thought, and by abnormally increased excitability of the cerebral motor centers." In opposition to this, it should be pointed out that there are periods when the maniacal patient is amenomaniacal, without presenting the impulse to think or the rapid flight of ideas, and that the intensification of the rapidity of thought is in no way in relation to the degree of the pleasurable emotional state. Moreover, rapid flight of ideas occurs in delirious fever patients, etc., without pleasurable emotion; and, on the other hand, alcohol may induce such a state of feeling without simultaneously increasing the rapidity of thought.

[1] Synonyms: Hypomania—Mendel; furious mania—Schüle.

there is an altered apperception of the external world. Instead of the somber color with which the external world appears to the melancholic as a result of his psychic dysesthesia, to the maniacal it seems warmer, more beautiful and interesting. On this account he cultivates associations, goes into society, travels, in contrast again with the melancholic, who avoids people or even detests them.

The general result of the changed process of apperception of the external world and of self is an increased estimate of self-value which frequently finds its expression in personal adornment.

Though a joyful emotion forms the emotional basis of maniacal insanity, contrary feelings are not therefore excluded. Owing to the unlimited association of ideas and their lively coloring, opposing ideas may be called up. Frequently, however, they arise artificially from restraint of the freedom of the patient, from opposition to his wishes, etc., by which the abnormally intensified feeling of self-valuation is hurt. These painful and choleric states of feeling, however, are only episodic, and, owing to the increased rapidity of thought, are quickly overcome by the pleasurable fundamental emotion. In thought the rapidity of the transformation of psychic energy is expressed in facilitated reproduction, association, and combination of ideas, which necessarily lead to an overfilling of consciousness; they thus stand in striking contrast with the monotony and inhibition of the activity of thought observed in melancholia.

With the facilitation of reproduction and apperception and the warm coloring of thought and apperception, the patient becomes more plastic in his diction and remarks at once the point of the subject, the weaknesses and peculiarities of those about him; he is quicker in his comprehension, and, owing to his facilitated association, is at the same time ready, witty, and humorous, even to irony. The overfilling of consciousness gives him an inexhaustible supply of subjects of conversation, and the greatly increased rapidity of thought, in which long connecting links are manifest only by slight indications without being verbally expressed, makes his train of thought appear interrupted.

The intensified valuation of self causes natural language to be disdained, and the patient tries to express himself in literary language. During the stage of maniacal exaltation of maniacal insanity there may be disturbances in the content of thought that are, for the most part, episodic, and consist of rendering allegorically objective the intensified feeling of self-aggrandizement. Occasionally the patient compares himself with a distinguished personality without identifying himself with the individual.

His consciousness is too little disturbed to permit this. He is always able to exercise critical judgment of his own condition, and describes his state of mind as abnormal, in that he excuses his hasty actions, for want of a better explanation, by saying that he is a fool and that to such an individual everything is permitted.

There may be hallucinations, but at most they are only temporary, and are usually corrected; or at least they are never acted upon. Illusions occur more readily, owing to the greatly increased activity of thought.

On the psychomotor side of mental activity the disturbance is first manifest in increased will and impulse; but all motor acts of the patient, in contrast with furious mania, are of psychic origin and take place consciously.

Their causes are affective states or clearly conscious ideas. They are like normal acts, only remarkable in that they are hurried, ill considered, irrelevant, jocular, shocking, or even immoral, without, however, presenting the possibility of characterizing them as absolutely unreasonable (*comp.* page 95). This exaltation of the psychomotor side of mental activity is clinically expressed in desire to wander, frequent saloons, seek out old friends and acquaintances, see notable places, write, make purchases, etc. The absence or too late occurrence of inhibitory controlling ideas causes these acts, which in themselves are not senseless, but only irrelevant and hasty; and since, at the same time, there is an absence of esthetic and ethic inhibitory ideas, they are frequently shocking. The lively coloring of all perceptions by pleasurable emotion causes such patients to be full of desire; and their abnormally intensified feeling of self-aggrandizement renders them troublesome, talkative, and disputative. The transitoriness of their impulses causes them to be inconsistent, incapable of all occupation, and unable to complete whatever they have undertaken.

Not in all of these patients are the general features of the disease developed. In some cases the impulse to talk, in others intensified volition,[1] and in still others pleasant emotion is the most prominent symptom; and in the latter case it may be either a simple exaltation or have an erotic or religious coloring.

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[1] Under such circumstances, not infrequently there is an impulse, important from a legal standpoint, to collect and steal objects, sometimes due to uncontrolled desire (directed to food, alcohol, jewels, or even to money as a means to an end); sometimes caused by a desire to joke, or injure and embarrass others; or as a result of illusions and the impulse to activity.

. It is not worth while to give names to these various clinical varieties. Almost always—and in females, indeed, always—in maniacal exaltation the sexual sphere occupies the foreground of consciousness. The sexual impulse expresses itself here in a superficial disturbance that is still tolerable: in men, by paying attentions to women, hasty promises of marriage, questionable allusions in conversation, visits to brothels; in women, in inclination to self-adornment, to seek male society, to flirt, to talk of scandal, to invent stories of love-intrigues, and in suspicion of other women (*comp.* page 82).

Very frequently in this state of exaltation there is an increased desire for stimulants, satisfied in highly seasoned food, smoking, taking snuff, drinking strong coffee, and especially in the use of alcoholic drinks. Under such circumstances such excesses readily lead to intensification of maniacal exaltation to the height of furious mania.

Physical Symptoms.—Disturbance of sleep is here quite constant. The patients sleep but a few hours, get up in the middle of the night, and busy themselves about the house or in the street. There is a feeling of increased physical well-being, of increased power and capability of action. The patient cannot find words enough to describe his maniacal well-being, his infinite good health. There is here no feeling of physical fatigue, not even after forced walking and other kinds of over-exertion.

But the patient is actually fresher. He looks younger, his turgor vitalis is increased, his expression is livelier, his vegetative functions act more promptly; the appetite is increased, but, on account of his great motor unrest, he often finds no time to satisfy it.

In spite of all signs of increased metabolism, and in spite of good assimilation, the body-weight falls. The muscle-tone is especially increased. The muscles are firmer and more turgescent. The attitude is more erect, and the sureness and rapidity of movement are greater than under normal circumstances. Movements take place with remarkable promptness, and give the impression that the will excites more immediately the motor centers. The patient himself becomes conscious of this facilitated innervation and co-ordination, and is thus further incited to good feeling and pleasure in activity.

Occurrence and Course.—Maniacal exaltation as a form of disease characterizing the whole duration of a case of mental disturbance is infrequent. It occurs oftener as an episodic manifestation. In this sense it is a prodromal stage or a remission in furious mania, or a transitional state in other forms of insanity. It may be also a phase of circular or hysteric insanity. As a prodromal state it occurs in general paralysis of the insane; but in such cases it is peculiarly

colored by signs of mental weakness which early lend a tinge to its symptoms.

As an independent disease-picture it appears most frequently in the form of periodic attacks (*vide* "Periodic Maniacal Insanity"); but in such cases, in harmony with the degenerate foundation, it takes on a reasoning and irritable color. In the rare cases in which maniacal exaltation is independent, and not a part of a periodic psychosis, it is usually preceded by a melancholic prodromal stage. Its course is remittent with exacerbations, and it continues weeks or months. It may fade; its disappearance is then gradual, not sudden, and, in accord with the mildness of the disturbance, there is a stage of exhaustion slightly marked and of short duration which follows. In other cases, especially due to sexual and alcoholic excesses, it passes on to furious mania. The prognosis of this mildest form of maniacal insanity is favorable, and without the danger of psychic defect that follows furious mania.

THERAPY.—The most important means of treatment is isolation adapted to the degree of the exaltation, and the prevention of all abnormal irritation, especially excesses. For many cases hospital treatment is sufficient, where an isolated room may be temporarily necessary. To overcome sleeplessness and restlessness at night, chloral hydrate, sulphonal, and trional are useful. Narcotics, especially opium and morphine, so frequently useful in periodic cases, are here disadvantageous, and often have the effect to increase the excitement.

On the other hand, it is rare for lukewarm baths, especially when prolonged, to fail to produce a quieting effect on the central nervous system; but this effect lasts usually only a few hours.

Where states of excitation have their origin in the sexual system, it is well to administer bromides. At the same time, under such circumstances, the patient must be carefully watched on account of the tendency to onanism.

CASE 11.—Maniacal exaltation during the puerperium.

Mrs. L., aged 28, painter's wife. Her mother became insane at the age of 36, during the puerperium; one sister was a deaf-mute. Patient was previously healthy with the exception of small-pox, and she was strong. She had had her first child at the age of 18, and her second at the age of 20. Thereafter she had four children. She nursed the child next to the last twenty months. She was reduced by frequent births and nursing, and besides the family was needy and had trouble in gaining sufficient food. During the last pregnancy, which lasted until the 2d of November, 1880, the patient often had attacks of dizziness and symptoms of mental exhaustion. The birth was normal; the patient nursed her child fourteen days. After a violent shock due to a sudden

illness of her husband on the 15th of July, she became confused and brought home playthings instead of food on the 16th. She became sleepless, delirious, and saw her dead parents, the protecting spirit; the evil one, who gave forth frightful odors; and the Virgin Mary, who protected her. Those about her seemed hostile, and she wandered around confused and without plan, once to the water and another time with her child, and another to her pastor to confess. On the night of November 22d she tried to take a wardrobe downstairs.

When admitted, November 22d, the puerperal initial delirium had disappeared. The patient was without fear, lucid, and had insight into her delirium; but she presented symptoms of slight maniacal exaltation, which gave the impression of a stage of remission of an acute hallucinatory puerperal mania. The further course justified this presumption.

The patient, who at the time of her admission manifested causeless gayety, slight erotic excitement, inconstancy, lively play of facial expression, abnormally rapid and interrupted flow of ideas, as indications of her maniacal state, remained up to the time of her convalescence in the stage of maniacal exaltation. She was continually gay, lively, and all impressions were for her pleasant and ridiculous.

She took pleasure in jokes and humorous comparisons; pushed herself forward in conversation; played the coquette, saying she was in love; declared that she was going to marry another man, and that her husband could find another wife. She wanted to marry the professor or the doctor, though this was not in earnest. Her consciousness was not more deeply disturbed. She was quite conscious of her abnormal condition, but she thought that she was absolutely faithful, and a little sinning in delirium could not be counted against her. Formerly she was insane. Patient built all sorts of air-castles. She was inexhaustible in bad witticisms, and her thought was precipitate, often erotic, without becoming indecent. She had to sing and talk in order to distract other patients. She had no longing for her relatives, who were able to take care of themselves. Formerly she had had a hard time, but now she was going to have a good time in the hospital. She was filled with desire for food and drink. At the beginning she was restless at night; with better food and beer and wine she began to sleep.

The patient is of medium size, without signs of degeneration, and with no indication of vegetative disturbances, though she is very anemic. Her general state is much reduced. Uterine involution has taken place normally. The pulse is small and the artery underfilled.

Occasionally the patient recognizes a military surgeon who visits the hospital, as the emperor; another gentleman as the crown prince. There were no hallucinations observed.

Toward the end of December the patient became quiet and more orderly, asked about her relatives, corrected her illusions, and asked for work. She was then able to associate with other patients and worked diligently. Visits from relatives had a favorable effect. The return of the menses on December 21st took place without disturbing her convalescence. The treatment in this slight case of puerperal mania was limited to isolation, good food, baths, and preparations of iron. She had gained three kilograms during her time of treatment. On January 14, 1881, she was discharged cured, and remained well.

II. Furious Mania.

Furious mania is a higher stage of development of mania than maniacal exaltation.

The idea of furious mania, originally gained from the external furious conduct of the patient, must be submitted to scientific limitation. Fury is a mere symptom, while furious mania is a distinct pathologic state occurring in the course of mania. The fury of the melancholic due to fear, the fury of the delirious (epileptic, hysteric, alcoholic, febrile), due to frightful hallucinations, is not to be confounded with furious mania. The distinctive characteristic of furious mania is increased rapidity of psychic processes, going even to complete loss of control, in which the ego of the patient has lost all directive power and is no longer able to control the psychic acts. With this there are signs of direct excitation of the organ of consciousness.

In the psychomotor centers of the forebrain these consist of irritative processes which cause motor acts, which, though they possess psychic features, are still without purpose or end, arise unconsciously without intervention of the will, and therefore must be characterized as purely impulsive acts. These repress more and more the voluntary acts of the patient in maniacal exaltation based on ideas and pleasurable feelings. Further manifestations to be mentioned as phenomena of excitement that are seldom wanting are delusions and errors of the senses. Naturally, owing to the profound disturbance of the psychic organ, there is pronounced involvement of consciousness. A closer study of the disease-picture shows that upon the affective side and formally there is greatly increased excitability (psychic hyperesthesia), as result of which all impressions that reach consciousness are colored with lively affects.

Here, too, as in maniacal exaltation, expansive affects predominate; but affects of an opposite nature, especially those of anger, are not excluded. Indeed, there are rare cases in which the affect of anger predominates throughout the whole course of the disease (angry mania). These clinical differences in the disease-picture are partly dependent upon original anomalies (tainted cerebral organization) of a patient naturally choleric and of irritable character, partly artificially produced by restraint, and partly a reactive manifestation dependent upon frightful delusions, hallucinations, and complicating feelings of fear.

If an emotional state of anger be due to any of these factors, owing to the greatly increased excitability, secondary painful repro-

duction of ideas takes place, which, however, in contrast with agitated melancholia, present the character of the flight of ideas with variations in the train of thought. These then maintain an angry emotional state. Such cases of pure angry mania are the most infrequent. Expansive cases are much more frequent, and the most frequent are those of a mixed form: *i.e.*, those in which, with the great excitement and the rapid change of ideas, together with unlimited association, there is a striking variation in the content of the most varied emotional states (variation of humor). Since the ego is powerless in the face of this excitement, owing to the great increase of all psychic activities and the absence of all inhibition, these affects manifest themselves throughout the entire domain of expression and movement. Thus, foolish joy and maniacal exaltation alternate with phases of angry excitement and painful weeping; singing, whistling, shouting, and bawling alternate with angry howling and fury. Often a transitory external impression or some thought suffices to change the emotional state into an opposite one, on account of the psychic hyperesthesia.

The great increase in the rapidity of thought leads to flight of ideas; and since no single thought can be retained in mind, a logical series of ideas is impossible, and the result is incoherence (overfilling of consciousness; association of ideas due only to assonance and alliteration; spontaneous, physiologic production of ideas independently of association).

Thus, necessarily, the logical association of ideas and the grammatic form of speech are lost. Fragments of sentences, disconnected words, and finally mere interjections or cries, indicate the varying degree of the maniacal flight of ideas and incoherence.

Owing to the great rapidity of thought, apperception is imperfect, and therefore illusions are facilitated.

Hallucinations may occur at any time and in any sensory domain. They are very frequent when the course is acute, especially in the visual sphere.

Almost without exception there are delusions. They are, for the most part, connected with errors of the senses, but they may be primordial; least frequently they arise as temporary attempts to explain states of consciousness and sensations. Their content is infinite in variety, but, for the most part, of an expansive nature (grand delusions). Frequently, especially in women, they have a sexual coloring, or its equivalent—a religious tinge. Such delusions are: of being the Virgin Mary; of being overshadowed by the Holy Ghost; of having given birth to Christ. In angry mania, delusions

of persecution, especially of a demoniac coloring, may form the nucleus of the emotional state.

These delusions are, owing to the transitoriness of their causes and the rapidity of thought, which allows no reflection, desultory; and only seldom, or in mania that becomes chronic, do they lead to a lasting change of consciousness, with possible termination in secondary delusional insanity.

The psychomotor sphere presents the most important phenomena of the disease-picture, and these have given the disease its name. Aside from the pauses that arise from exhaustion, the patient is in constant activity, and there is no voluntary group of muscles that is not brought into action. The motor acts of the patient are due to various causes. In transition from maniacal exaltation to mania, and during the remissions of mania, there may be formal volitional acts; but, since the underlying ideas, owing to the increasing rapidity of thought and of cloudiness of consciousness, become less and less clear, such voluntary acts take on more and more the character of impulsive acts. At the same time there are psychic reflex acts due to joyous emotion (dancing, singing, etc.), or to fear and anger.

At the height of the disease such psychically conditioned motor acts occur only rarely. They are pushed aside by impulsive movements due to direct irritation of the psychomotor centers; at the same time there are acts due to delusions and errors of the senses.

Very frequently, too, in mania, the sexual instinct is excited, and cases in which this predominates are often called satyriasis in males and nymphomania in females.

The more profound disturbance of consciousness as compared with that of maniacal exaltation allows the sexual impulse to express itself without reserve: in the forms of direct attack on persons of the opposite sex, open onanism, and movements of coitus.

Doubtless, in women, the following should be regarded as equivalents: constant spitting; satisfaction of nature in the presence of the physician; smearing the body and walls with feces, saliva, menstrual blood, and urine; obscene scolding of nurses.

The disturbance of consciousness is extremely varied in character, in general more marked the more acute the course of the disease. Memory of the period is quite parallel with its degree. In chronic mania memory may be undisturbed; but, when the course of the disease is acute, it is at best only summary. Complete amnesia does not occur in true mania.

Physical Symptoms.—Disturbance of sleep is a constant phenomenon. It may be wanting for a week at a time. Attacks of cere-

bral congestion are frequent, and are sometimes to be regarded as causal in nature; but usually they are consecutive phenomena (active congestion due to functional cerebral excitement or to lessened resistance, referable to vasoparesis).

The frequency of the pulse is very little influenced, when the excessive muscular activity is taken into consideration. In spite of violent mania, the pulse is often rather slowed than accelerated, and rather small than full.

The body-temperature is normal, sometimes even subnormal, since the increased production of heat by forced muscular work is more than compensated for by the increased loss of heat due to insufficient clothing. Any considerable and continued elevation of temperature above 38° C., if it cannot be referred to a complicating physical disease, should raise the question whether the case is to be regarded as one of mania, or one of acute delirium, or whether it is not a state of psychomotor excitement dependent upon some other organic cerebral disease.

In the early stages of mania the turgor vitalis is increased. The patient looks younger and fresher. When mania has continued for a long time, nutrition and strength diminish, and this may go on to a state of inanition. Always at the height of the disease there is progressive loss of weight. The secretions may be perfectly normal. Often the urine is abnormally rich in phosphates; a very frequent symptom is salivation, which accompanies exacerbations of the psychosis.

Sensory disturbances play but a small part in cases of mania. Sometimes, during the remissions, patients complain of headache. Any anesthesias that occur, especially insensibility to cold, which is striking, are always due to a central cause. Sensorial hyperesthesia is not infrequent.

Motor disturbances in the infracortical domain, in the form of cramps, limited muscular twitchings, grimaces, etc., may occur as a complication at the height of severe mania, and they represent transitions to acute delirium and other cerebral diseases.

FREQUENCY.—Furious mania occurs much more frequently as an independent form of disease than as a symptomatic form. In the latter case it usually has a sudden outbreak, acute course, and occurs in dementia paralytica and other cerebral diseases with predominating psychic disturbance. In hysteria, and in certain forms of circular insanity, where the course is brief, general maniacal symptoms alternate with symptoms of stupor and tetano-cataleptiform manifestations.

ORIGIN AND COURSE.—The acute and chronic cases are to be differentiated:—

(a) Acute mania lasts from a few days to weeks; it breaks out suddenly, after previous sensorial, but not melancholic symptoms (headache, congestion, disturbed sleep, fear, irritability). Thereafter come symptoms of maniacal, and usual irritable, exaltation, which with remarkable rapidity attain the height of mania. The more acute the course, the more profound is the disturbance of consciousness. The descent from the height of the disease is usually quite rapid. Symptoms of functional exhaustion, even with slight stupor, constitute the transition to health.

Acute mania often runs its course as angry, or, at least, irritable, mania. Angry mania runs its course in a few days, but recrudescence is easy, so that a protracted insanity develops, in which the single angry explosive attacks are sharply distinguished from the remissions (periods of functional exhaustion with irritability).

(b) Chronic mania lasts months or a year or more. It is usually preceded by a melancholic prodromal stage. The duration of this prodromal stage varies from a few days to a few months. The longer this lasts, the longer the following attack of mania lasts.

This prodromal stage is merely indicated or wanting in puerperal cases, in cases due to sudden loss of blood, and in cases that arise during convalescence from severe febrile diseases. It is also wanting in cases due to direct cerebral shock, like trauma capitis and insolation, and in mania due to alcoholic excesses. The more mania appears to be organic, and the more it seems to be due to physical causes, the more frequently this prodromal stage is wanting. This stage is usually that of melancholia without delusion, but the statement of Hagen that delusions and errors of the senses never occur is not true. The symptoms of this melancholic prodromal stage are essentially those of a disturbance of psychic and general physical feeling (difficulty of mental activity, general prostration, heaviness in the head, gastric disturbances, constipation, etc.), like those which precede the outbreak of a severe physical disease, especially an infection. Out of this condition psychic depression develops, often of an hypochondriac character. In the further course there is painful reflection concerning the former life, which may give rise to self-accusation and disgust of life. Frequently this stage passes unobserved, or is intentionally concealed by the patients, who know how to accomplish this or who know how to explain their condition rationally (Mendel).

The transformation to mania is usually sudden; still, it is never so strikingly so as in circular insanity. Sometimes there is a period of alternation, lasting hours or days, in which melancholic and maniacal elements are mingled, striving, as it were, for a mastery, until the maniacal disease-picture becomes pure. Sometimes quickly,

sometimes slowly, the mania develops out of this maniacal exaltation. The impulsive activity takes on more and more the character of the flight of ideas; the expansive emotional state becomes a kaleidoscope of the most opposite emotional states of excitement; movements become more and more impulsive and uncontrollable, with increasing disturbance of consciousness; and delusions and hallucinations are added. The general course of chronic mania exhibits remissions and exacerbations. During remissions the disease-picture changes to that of maniacal exaltation, which, of course, is often covered by signs of functional exhaustion. The latter may be of a painful character; and under such circumstances, owing to the great excitability, moroseness and explosions of anger may occur.

THE TERMINATIONS OF MANIA are:—

1. Recovery.[1]—Recovery never occurs suddenly, but gradually, with remissions and various transitional conditions. A sudden cessation of mania indicates a symptomatic or periodic foundation.

The transitional stages to recovery may be:—

(a) A stage of melancholic depression like that which characterized the beginning of the disease. Such a manner of termination is very infrequent, if a stage of exhaustion, with perception of mental insufficiency due to exhaustion, is not regarded as melancholia.

(b) A stage of stupidity, of functional dementia, as an expression of profound brain exhaustion, such as necessarily follows severe cases of chronic mania, or such cases as have been treated by bleeding. This stage lasts sometimes several months. Stationary weight, or but slight and gradual increase of it, in such symptomatic states of dementia, in contrast with the rapid gain in weight in states of terminal dementia, are the important points of differential diagnosis.

In general, the intensity and duration of this state of slight stupor, or complete dementia due to states of exhaustion, correspond with the intensity and duration of the previous mania, and with the intensity and importance of the causes, among which an original tainted constitution, abnormally deficient in resistive power, must be given special consideration.

(c) Passage of mania through a state of diminishing maniacal excitement, with simultaneous, but transitory, symptoms of psychic weakness ("moria").

(d) Gradual subsidence of the mania, the remissions growing more pronounced and clear, with no important manifestations of intellectual weakness. In such cases, however, often the emotional

[1] Mendel, "Die Manie," p. 155, estimates 80 per cent.

side of mental life is gravely implicated. A state of delicate equilibrium and of increased emotional irritability exists, which easily leads to explosions of anger and relapses.

The *prognosis* of mania is, in general, favorable; and the more favorable the more acute its course, when the nutritive disturbances are reparable (anemia, puerperium), when the causes are sympathetic, and when the patient is young and the brain not too much burdened. At the same time it should be said that severe mania but seldom permits a complete and scientifically satisfactory recovery; slight mental weakness (emotional, and with weakness of the will) often indicates cure with defect.

2. Termination in a secondary state of mental weakness (mental weakness or dementia in their clinical pictures; infrequently, secondary delusional insanity).

3. Termination in death[1] due to exhaustion or to intercurrent diseases; to injuries, with possible fat-embolism of the lungs (Jolly); or to advance of the cerebral disease-process to the intensity of acute delirium.

THERAPEUTIC INDICATIONS. — *1. Isolation.* — The clinical fact that maniacal states are states of cerebral excitement, especially associated with hyperesthesia of the psychic and sensorial functions, demands, as the first indication, psychic and cerebral rest: *i.e.*, avoidance of all lively sense-impressions and all psychic irritation in general. This object can be attained only by an intelligent isolation of the patient, the degree of which must correspond with the degree of cerebral hyperesthesia. In many cases simple isolation is sufficient to promote the recovery of the patient.

This isolation saves the patient from excesses, especially in alcohol and venery, which, were they indulged in with freedom, would do great harm.

2. Protection of the patient and others from his destructive outbreaks. It is seldom that a patient injures himself; therefore padded cells are not necessary, and, besides, they cannot be kept clean. Too, the maniacal patient, except in acute mania with profoundly clouded consciousness, or when in a state of angry emotion, is not so dangerous to others as is often supposed. Many maniacs know what they do, and retain a certain amount of reason, even when they are incapable of controlling their acts. The belief that maniacs are abnormally strong is a prejudice; and their treatment, for this reason, with chains and camisoles is cruel. Mechanical

[1] Mendel *(op. cit.)* computes 5 per cent. mortality.

restraint is only permissible for therapeutic reasons, when the horizontal position, as in a case of profound anemia of the brain, or in certain cases of surgical injuries, is necessary.

An attempt to diminish the movement by mechanical restraint, and thus to conserve strength, is useless. The patient makes more exertion in a camisole than when left to himself. Many cases of mania are actually intensified by mechanical restraint, especially when an effort is made to impress them by it. It is a fact that the violence of mania, with the increasing use of the principle of non-restraint, has been decidedly diminished. Maniacs that destroy everything and constantly undress themselves, should be left naked in a well-warmed cell; or seagrass or horsehair, which is better, may be given them for covering. All objects should be taken out of the cell. In a few cases, hyoscine or duboisine may be used temporarily to advantage. Their frequent administration is contra-indicated on account of their effect to interfere with general nutrition.

3. Maintenance of a State of Good General Nutrition.—Raving, sleeplessness, and delirium consume the patient's strength; and this must be compensated. Not infrequently does the final result depend upon whether the nutritive disturbance of the brain, after the mania has passed away, is reparable, or goes on to atrophy. Rich nitrogenous food must be given, and the patient allowed to eat as much as possible, with milk exclusively to drink.

4. Treatment of the Cerebral Excitement, the Impulsive Movements, and Sleeplessness.

Formerly the violence of mania was taken to indicate inflammatory or congestive states of the brain, and an attempt was made to apply all possible antiphlogistic and derivative means of treatment.

By this means (venesection) the brain was only exhausted and irritated (counter-irritation, douches, setons, blisters) and the digestion destroyed (tartar emetic, sulphate of copper, acetate of zinc). All these remedies should be excluded from the therapeutics of mania. Bleeding, especially venesection, is also in general to be laid aside.

However, congestions are frequent and worthy of consideration, but they are due to disturbances of vasomotor innervation or the result of cerebral excitement. Under such circumstances bleeding can do no good, but rather increases the vascular paralysis and poverty of the blood. The very circumstance that mania arises often out of extreme excesses or great loss of blood (puerperium) should cause us to be very economic in the matter of the patient's blood, quite aside from the circumstance that jactitation, sleeplessness, and loss of body-heat are in themselves injurious to the processes of nutrition.

The *symptomatic* treatment of mania must be individualized, with consideration of the causes and the presumable pathologico-

anatomic disturbances. In attacks of mania with decided congestion, and with symptoms of increased reflex excitability, jerkings, gnashing of the teeth, contracted pupils, etc., indicating marked cerebral irritation, bleeding is permissible; but this should never be general, only local (leeches). In such cases, too, derivation through the alimentary tract by means of calomel, etc., may suffice. Ergotine, subcutaneously or internally, also deserve consideration.

As a rule, however, in such cases, as in simple congestive attacks of mania, the end may be attained by ice-caps, baths with ice to the head, and digitalis.

In cases attended by predominant sexual excitement, potassium bromide in doses of from 4 to 10 grams is useful.

In mania due to alcoholic excesses, and also in mania that presents itself in the clinical picture of angry affect, opium or morphine is indicated.

In mania due to or attended by cerebral anemia, brandy, beer, wine, and occasionally also chloral hydrate are the best remedies to give quiet and sleep. Rest in bed also may be very useful. If the maniacal excitement change to a state of stuporous exhaustion, then rest in bed, warmth, rich nourishment, and patience are the principal means.

In the stage of convalescence the patient requires most careful watching and protection from irritation of all kinds, in order to avoid a relapse. If at this stage there is great irritability and tendency to outbursts of anger, morphine is the best means to shorten the period of convalescence.

CASE 12.—Acute angry mania initiated by an outburst of anger.

S. W., aged 17; her father was a drunkard. Several of her family suffered with convulsions. She had typhoid at the end of her first year, and then suffered with rickets. She learned to walk the second time only when she was four years old. She developed well mentally, but was always given to outbursts of anger, irritable and sensitive. The menses began in her fifteenth year without disturbance.

May 10, 1878, she entered the service of a dressmaker to learn the trade. On the 12th she got angry with a companion who asked her to wash the dishes. She thought this was a grave insult, and became violently angry. At that time the patient was having her menses. Her anger increased. She became sleepless, and thought constantly of her dispute with her companion.

On the 19th she visited a family of friends, and immediately began to talk of her trouble, seeming to be confused and dangerously excited; reasoned with, she became uncontrollably angry, scolded, swore, declaring that she was injured by everybody, and she ran out and came home late in the evening with flushed face, scolding and saying that she would not allow herself

to be ruled by anybody. She did not sleep, ate nothing, tried to leave the house, and, when an attempt was made to restrain her, she struck everybody around.

On admission the patient was in the state of angry mania. Her speech was of all kinds of unpleasant things and disconnected, with lively gesticulation. Every attempt to quiet her only increased her excitement. She poured forth a torrent of violent language on all around her; said she was no longer sick, though the night before, on account of an insult, she had had an attack of insanity, her head had felt hot, and she could not sleep. When an attempt was made to undress her, she became violently angry, spat, kicked, twisted about as best she could, and threatened to expose everything in the newspaper. She would not stay with such fools, and, if she was to stay, then she must be cared for in a noble manner.

The patient was remarkably short and undeveloped. Her thorax and the bulged cranium with prominent frontal and parietal protuberances, indicated the early rickets. Also the teeth were irregularly placed and grooved; the vegetative organs presented no disturbance. Pulse, 100, full, quick; weight, 31.5 kilograms.

The patient remained at the height of angry mania until the end of June. She slept little, and was reduced to 29 kilograms in weight.

Intensified feeling of self-importance, which found its expression in affected speech and attitude and grand airs, now and then attended with evidence of eroticism, and coquetry, formed the most striking symptoms during periods of remission. The patient was, for the most part, in angry excitement. She scolded, raved about in her cell, and was destructive; thought those about her hostile, and was extremely confused in thoughts, which, for the most part, concerned former insults, dissatisfaction with food, care, isolation, etc.

Injections of morphine had a calming effect, but did not overcome this condition. At the end of June the explosions of anger became less frequent, and there were longer pauses of exhaustion. The patient slept much and took the food regularly that she had formerly refused; weight increased rapidly to 36 kilograms. Now and then there were still slight indications of angry excitement that passed off spontaneously, or after an injection of morphine. The patient passed the greater part of July in bed, quiet, exhausted, and talking little. In August she gained complete insight into her disease and regained her former strength. In September she was discharged completely cured. She weighed at this time 41.5 kilograms.

Case 13.—Mania with occasional nymphomania.

Miss S., aged 22, official's daughter, comes of a tainted family; mother's father was exalted; mother's brother insane; father's brother eccentric; father's sister and brother insane.

The patient developed normally, and was free from all signs of taint. At the age of 9 she had typhoid with delirium. At the age of 15, menses came on with some trouble, and thereafter recurred regularly. For some time she had been chlorotic and required much sleep.

In the middle of May, 1877, she became depressed without appreciable cause. She was shy, silent, had precordial distress, and complained of psychic anesthesia, disgust of life, and dullness in her head.

On June 9th the melancholic depression changed to a maniacal condition. She became gay, changeable, talkative, busy, and occupied with ideas of marriage, home, and fine clothing. Almost all night she would play on the piano, became very sensitive and irritable, complained of headache, and looked congested. Her tongue was coated. She had no desire for food, and was constipated. The extremities were cool, pulse small (80), the pupils of medium size, reacting to light. Occasionally, for an hour or so, she would sing, whistle, and laugh. By wet packing, several hours of sleep were obtained.

With continued violent congestions (ergotine was unsuccessful, even with the use of an ice-bag to the head), on the 14th the patient reached the height of mania, so that it was necessary to send her to the hospital. On admission she was without fever, weighed 49 kilograms; tall, slim form. No congestion; pulse, 48, small, quick. No signs of degeneration. No vegetative disease. Intercostal neuralgia on the left side. Absence of the hymen. Relaxation of the vaginal mucous membrane, moderate fluor albus, lateral version of the uterus. Eyes brilliant, profuse salivation, lively change of facial expression. The patient becomes joyful, singing and crying. Flight of ideas. The delirium is concerned with erotic subjects.

She removes her clothing and reproaches the physicians severely. Placed in bed, she boxes the ears of the nurses; throws herself about. She is sleepless, confused, and dances about all day. She talks of love, sings, rhymes, smears, makes movements of coitus, and strikes around her. Packing and baths bring only a few hours' sleep. She walks about naked, tears everything, talking all the time, but never finishes a sentence. She speaks all the languages she knows, mixing them all together. With this there is inclination to rhyming and distortion of words.

She thinks she is married, the wife of the physician, and busies herself about an infant. At the time of her regular, but scanty, menses, she is nymphomaniacal and cannot be approached. At such times she smears herself with saliva, feces, and menstrual blood, stands on her head, and is salivated.

The course presents but slight remissions. Sleep is induced by variation in the use of chloral hydrate and packing, which have an excellent hypnotic effect. The patient does not sleep spontaneously. She has numerous visual hallucinations, especially at night. Blackmen, fantastic forms, etc., surround and disquiet her. Owing to motor unrest, the patient cannot eat spontaneously. The confusion continues; the general state of nutrition sinks decidedly (weight, 45 kilograms at the beginning of January, 1878). At the end of January the patient comes to herself out of her severe mania, complains of headache, pain in the stomach, intercostal neuralgia, and wishes to know how long she has been here, and whether she has had cerebral typhoid. She is still somewhat confused, and still thinks she is the wife of the physician. Still, during hours or days, she has maniacal relapses, especially at the period of the menses, and gives evidence of temporary nymphomaniacal excitement. Thereafter there are signs of mental exhaustion, listlessness, tendency to emotional excitement, with childish action, great irritability, and inclination to childish play. The remains of erotic excitement are indicated by lack of modesty before the physicians. Her state of general nutrition improves gradually, until she weighs 47 kilograms. At the beginning of March the patient becomes quiet, orderly, and decent. She has complete consciousness of her disease, and with distress remembers the events of her sickness.

The menses in the middle of March pass with the use of 8 grams of potassium bromide, with only slight excitation and erotic excitement. The patient feels very tired, languid, and emotional, and has no inclination to occupy herself.

At the beginning of April these last indications of the disease pass away. Her weight increases to 50 kilograms. The middle of April she is discharged. On a visit, in the middle of May, the patient had attained normal weight of 60 kilograms.

CHAPTER III.

Stupidity, or Primary Curable Dementia.

THE clinico-psychologic characteristic of this psychoneurosis is difficulty in the activity of the psychic functions, which may attain the degree of absolute arrest, with simultaneous absence of emotional accompaniment.

Vasomotor anomalies of innervation (vascular spasm, vascular paralysis), disturbances of motor innervation (called catatonic), and episodically states of psychomotor excitement, as well as errors of the senses, may complicate the stupor. Owing to the occurrence of these complications in the disease-picture (delusional stupor), there are clinical transitions to the form of primary hallucinatory insanity.

These states of retardation or suppression of psychic activity are different from the anomalies that occur in acquired idiocy, and in contrast with the intellectual incapacity of melancholia attonita due to an arrest of the power of reaction. They have no emotional base and constitute, as compared with the state of exhaustion after mania, which takes on the form of stupor, primary conditions. Again, in contrast with states of progressive primary dementia (senile, apoplectic, etc.), which depend upon grave organic changes, they are curable states.

As the conditions upon which the suspension of the activity of the psychic organ depends, there may be cerebral exhaustion, shock due to psychic trauma (affect), or physical shock.

In the first two instances, there must be a predisposition in lack of cerebral resistive power, either original or due to various causes that have rendered the brain irritable and easily exhausted.

Pathogenically and clinically, cases may be differentiated into the stupor due to inanition, to emotional shock, and to head injury.

(a) STUPIDITY DUE TO EXHAUSTION OF THE PSYCHIC ORGAN.

This is the most frequent clinical form. Defective renewal of the elements of force and disturbance of their transformation into

living force are the probable causes of the hindrance of function, which may even go so far as arrest of psychic activity.

Without exception, the victims of this state of exhaustion are weak, delicate, neuropathic, youthful individuals. I have found with remarkable frequency, as further indications of taint, microcephalic and rachitic forms of the cranium. This form of mental exhaustion does not appear to occur after the age of 30. A further favorable condition for its development is rapid growth during the years of puberty, especially in persons subjected to mental and physical overstrain and insufficient food. Not infrequently this condition represents the acme of severe cerebrasthenia.

The exciting causes are principally the puerperium, with great loss of blood; grave acute diseases, especially typhoid; and sexual excesses, especially onanism. To this group of stuporous insanity due to exhaustion and disturbed nutrition probably belong also cases due to extirpation of the thyroid (cachexia strumipriva) and intoxication with carbonic oxide gas.

In kind, the state of postmaniacal stuporous exhaustion is also to be reckoned in this group. Repeatedly I have seen this picture of stupidity artificially produced as a result of treatment of melancholia and mania by means of bleeding (venesection, leeches). The development of the disease-picture is gradual. From day to day the patient becomes slower and duller in his thought and action; he remains as if dreamily sunk in thought for hours at a time in the same place, and falls asleep at his work. After a few days or weeks he sinks into a state of stuporous dementia, in which he is scarcely any longer conscious of himself or the external world, devoid of all spontaneity, and living only a vegetative life. The patient must be forced to do everything, even to attend to the necessities of nature. He does not notice food set before him. It must be placed in his mouth that at least reflex activity may assert itself, and swallowing take place.

The countenance is confused, expressionless; the eyes glassy, staring into space. The pupils are dilated and react lazily. The skin reflexes are greatly reduced, but the deep reflexes are usually markedly increased. Sensibility is always reduced, and, for the most part, entirely absent; so that even powerful electric irritation makes no impression.

The muscle-tone is reduced, the attitude relaxed. No resistance is offered to the efforts of others. In rare cases there are episodic states of tonicity of the muscles, which may be in a cataleptiform condition. In severe cases there is the tremor of inanition.

If it be possible to induce the patient to put out the tongue, it is seen to be tremulous, usually with fibrillary twitching of the orbicular muscles. The heart's action is weak, with dull sounds; the pulse is usually slow, small, tardodicrotic, or monocrotic. If the patient be led around, if he is shouted at, the pulse becomes more frequent. The extremities are usually cool, even cyanotic. If the patient remain for hours at a time in a standing position, there is edema of the feet, which rapidly disappears in the horizontal position. On the other hand, in the morning on awaking the face is often slightly cyanotic.

The body-temperature is subnormal. In spite of abundant administration of food, nutrition and weight sink decidedly. Repeatedly I have found differences of ten kilograms between the weight on admission and the weight at time of discharge.

Constantly, at the height of the disease, an increase of phosphates in the urine, often enormous, has been observed. The profound disturbance of nutrition shows itself in the dry skin. Browne also noticed in his patients tendency to decubitus. In women, the menses cease during the disease. Owing to the venous stasis, there is not infrequently intestinal and uterine catarrh.

Cases dependent upon onanism are characterized by their development out of neurasthenia with nosophobia and symptoms of neurasthenia, especially spinal irritation; so that these patients in the deepest stupor react still to pressure over the spine. There are further not infrequently catatonic symptoms (tension and stiffness of the muscles; local tonic and clonic cramps, which may even become epileptiform), occasional olfactory hallucinations, and raptus-like outbreaks.

Respiration is superficial and insufficient. In consonance with the profound disturbance of consciousness the patient is unclean and the saliva runs from the mouth.

The course of stuporous insanity as an expression of brain exhaustion is remittent with exacerbations, for there may be for hours or days at a time traces of mental activity, power to speak, to move, and perception of impressions, in contrast with the state of dullness, stupidity, and absence of reaction. Exacerbations or complications may express themselves in complete stupor.

Episodically there may be frightful confusion with blind impulses (due to complicating hallucinations or cloudy apperception of the helpless painful state), as infrequent intercurrent manifestation of states of psychomotor excitement, lasting hours or days, in which the patient sings, whistles, talks, runs about aimlessly, commits impulsive acts, tears his clothing, and occasionally, also, becomes

aggressive toward others. Such states of excitement must not be confounded with mania.

If the malady take a favorable course, remissions become more prolonged and perfect. The expression becomes livelier; the patient begins to speak a few words and sentences, and at first begins to make imitative movements which later become spontaneous. He now also begins to experience a painful knowledge of his psychomotor incapability. These signs of improvement take place irregularly, sometimes followed by states of temporary exhaustion. Recovery occurs very gradually, with improvement of general nutrition, decided increase in weight, and the disappearance of the circulatory disturbances and the excess of phosphates in the urine, and a return of normal temperature. The memory for the period of the disease is wanting, or only very summary. The disease may extend over some months. The cases due to loss of blood seem to be the ones to recover most quickly.

The prognosis, owing to the youth of the patients and the functional character of the psychosis usually is favorable. In rare cases functional exhaustion passes on to irreparable dementia. Still less frequently there is a fatal termination due to consumption or pneumonia.

The etiology and symptoms of the disease point to a state of profound anemia of the psychic organ. Too, Aldridge's findings with the ophthalmoscope, with which my own observations accord, point to anemia. In the later stages Aldridge found edema of the fundus. In two fatal cases reported by Browne there was venous hyperemia of the pia in one, and in the other advanced edema of the pia and atrophy of a few gyri. Emminghaus found, in one case of acute dementia after fever, cloudy swelling of the ganglion-cells of the cortex.

The correct diagnosis of this state, which was formerly confounded with melancholia attonita, and even with idiocy, is of the greatest importance. In idiocy no mistake is possible, if the history is taken into account. From primary progressive dementia, it is to be distinguished by the sudden motor disturbances that occur as expression of severe organic disease of the brain (apoplexy, atheroma, etc.), as well as by the age.

Difficulties in diagnosis may be occasioned by cases of multiple and diffuse sclerosis of the brain, which likewise occur most frequently in youth. With reference to the first, the diagnosis will be cleared up by the relative limitation of the psychic paralysis with long-retained emotional and higher ethic functions; the irritable weakness of the emotional life; the number of motor and especially

spinal disturbances (ataxia, intention tremor, muscular rigidity, great increase of the deep reflexes, etc.), the dysarthria, nystagmus, etc.

The differentiation of stupidity as a psychoneurosis from primary progressive dementia due to diffuse sclerosis is to be made only by observing the course of the disease.

The following points are of differential diagnostic value with reference to melancholia with stupor: In primary stupidity the beginning is usually sudden; in melancholia with stupor it gradually develops out of ordinary melancholia. In stupidity there is absence of feeling; in melancholia there is an exquisite painful state of feeling. In the one there is the demented, stupid expression; in the other, an apprehensive strained expression. In primary dementia the activity of the voluntary centers is greatly reduced, expressed in relaxed attitude, reduced muscle-tone, absence of expressions of the will, and want of passive resistance; in melancholia with stupor, on the other hand, there is a peculiar state of tension of the muscles, which is greatly increased by efforts to make passive movement. In stupidity there are occasional states of psycho-automatic excitement; but in melancholia there are not infrequently explosive reflex acts that overcome the tension and psychomotor inhibition, which may lead to acts of violence against others or against the patient himself. In stupidity there is anesthesia of apperception, while in melancholia sensibility remains, manifest in the intensity of tension even to the degree of tetany, and the facial expression due to sensory irritation. In the one case, consciousness is absent with amnesia for the period of the disease, while, in the other, consciousness is occupied only by painful ideas, and there is quite perfect memory of the events of the disease. In the first case, again, there is inability spontaneously to take food, due to weakness of apperception, while in the other there is positive refusal of food on account of delusions and feelings of disgust, with decided loss of body-weight. In the first case, sleep is usually good, while in the other there is sleeplessness. On the one hand, the pulse is lazy, slow, and soft, while, on the other, it is quick and the artery often wire-like. In stupidity there is coolness of the extremities, cyanosis, and edema, which occur only in the later stages of melancholia; and likewise there is great uncleanliness in stupidity, contrasting with cleanliness and retention of the excretions due to increased innervation of the sphincters in melancholia. In the first case, finally, there is slow convalescence, while in melancholia recovery occurs sometimes suddenly.

The treatment of this condition has for its object the restoration of the functions of the cortex, interfered with by profound disturb-

ance of nutrition, by means of fresh air, rich food, wine, beer, rest, the stimulation of respiration, and the avoidance of unnecessary loss of body-heat. Rest in bed at the height of the disease is imperatively demanded. Watching, to prevent onanism, which occurs frequently enough, is necessary. Iron, arsenic, nux vomica, and preparations of quinine, codliver-oil, and malt are indicated. Symptomatically, reflex stimulation of vascular innervation may be furthered by wet, but not too cool, slapping and rubbing of the skin. Too, electric massage and general faradization deserve consideration as tonics and means of promoting metabolism and respiration.

Crichton Browne praises the effect of central galvanization (five to twenty elements). A further point requiring care in the convalescence of these patients, who so easily become fatigued, is minute attention to the amount of mental and physical activity allowed them.

CASE 14.—Stupidity due to enfeebling physical causes.

F., aged 20, blacksmith; formerly an industrious, good, and intelligent worker, he was brought, on February 25, 1881, by his employer to the psychiatric clinic. The patient, who came of a tainted family, but who had never been decidedly ill, had worked in his last place from July to Christmas, 1880, with satisfaction, and he was always pleasant and gay. From that date he was peculiar. At night he shut himself up in his room, was aroused with difficulty in the morning, sleepy, yawned much, said but little, neglected his work, and stood about staring dreamily into space. During the last few weeks he had been silent, ate less and less, and liked best to stay in his room on the bed. He forgot to eat, neglected his work, finally became entirely passive, and reacted only slowly to the loudest shouts. With difficulty he could be induced to say that something was wrong in his head.

On admission the patient is stupid and inert. He allows himself to be put in bed, and seems to perceive nothing. He allows himself to be fed without resistance, does not speak, and leads a purely vegetative existence. After a few days, and after repeated questions, in a low and interrupted voice he gives some notes about himself. Concerning his last place, and what is going on in his thoughts, nothing can be learned.

The patient is a slim, tall boy (180 centimeters), of delicate constitution, much reduced in general condition, and very anemic. His eyes have a neuropathic, swimming expression. His skull is normally formed (circumference, 55 centimeters); features delicate and somewhat feminine; genitals well developed. The pelvis approaches the feminine type (diameter between the anterior superior spines of the ilii, 29.5 centimeters); glance and expression fatuous; pupils equal, of more than medium size, reacting lazily. The vegetative functions are undisturbed; turgor vitalis is wanting. The extremities are cool and cyanotic. The urine contains enormous quantities of earthy phosphates; the skin is dry and rough; the pulse is soft, slow, monocrotic, and easily compressed. Sensibility of the cutaneous surface is much reduced. Only strong faradic stimuli cause the patient to react in painful facial expression. The limbs are relaxed, muscle-tone reduced, and the respiration is superficial. The pulse averages 80; out of bed it rises to 100. Temperature,

36° to 36.4° C. (Treatment: rest in bed, rich food, wine, and iron.) Weight on admission, 57.5 kilograms.

The patient remains in his stupidity and state of absence of reaction until the end of March. From that time on he shows traces of returning mental activity; the expression becomes livelier. He now and then laughs. When persistently questioned, it is learned that he is better. The patient becomes clean, and commences to carry out movements to which he is commanded, slowly, often hesitatingly, as if he had to think how this or that were done. Spontaneous acts are limited to the taking of food placed before him and attention to the necessities of nature.

Nutrition and circulation slowly improve. When the patient is out of bed, he immediately shows symptoms of cardiac weakness, and his extremities become cyanotic and cold. The beginning of May turgor vitalis returns, the heart's action becomes strong, the pulse fuller, slightly quick, and the cyanosis of the extremities disappears; the skin becomes warm, covered with perspiration, and the cheeks grow red. The body-weight increases markedly. The patient becomes freer in movement, shows spontaneity, helps in simple household work, and takes part in games of cards. His voice becomes stronger, louder, and it is easier for him to express his thoughts.

On some days, especially when the patient has been too much occupied out of bed, he is again somewhat lost and lazy, but, on the whole, he gains from week to week mentally and physically. June 10th he was discharged, completely recovered; weight at the time of discharge, 63.5 kilograms.

His account of events previous to his illness is as follows: From Christmas, 1880, he was tired, lost, and forgetful, felt weak in his limbs, and now and then a sense of oppression in the chest. Finally he became absolutely dumb, idiotic, and no longer knew anything about himself. Of what happened thereafter he had only a summary memory. No history of melancholic elements, delusions, and hallucinations can be obtained, and observation never revealed them. From Easter on he felt freer in his head, and again began to think. The patient deems his disease to be due to overwork, poor nourishment, and onanism; but there was also a neuropathic constitution, and his rapid growth during the last few years was notable (the sleeves of a coat bought two years ago were more than six centimeters too short). The recovery was permanent.

(b) Stupidity Due to Psychic Shock.

This clinico-etiologic group follows the foregoing, and constitutes a transition to the next. The exciting cause is an affect, usually fright; the pathogenic element is probably vasomotor disturbance (vascular spasm) due to emotional shock. A predisposition is always present, and still more important than in cases of the foregoing group. When the predisposition is marked (tainted, usually neurasthenic or otherwise exhausted brain, hysteria, etc.), the psychic shock may immediately destroy the integrity of the mental functions.

Analogous functional, but limited, disease-states are those of aphasia due to fright and the hysteric monoplegias.

The outbreak of the disease is always sudden. It begins im-

mediately with stupor, or develops out of a pathologic affect that has lasted hours or days, or out of anxious confusion with or without delusions and hallucinations. There are slight cases of simple confusion or mental torpor, and severe cases of profound mental cloudiness going ultimately to a state of stupor. The latter are characterized by contracted pulse, which frequently alternates with opposite conditions of vasomotor paralysis; and then there may be violent congestion, even elevation of temperature to 39° C., and more apprehensive restlessness with vague delusions or profound stupor as the probable expression of transudative processes. Slight cases usually pass off in a few weeks. Severe cases, and these are always accompanied by pronounced vasomotor implication and predominant stupor, may recover within a few months, presenting remissions and exacerbations; or these latter may go on with symptoms of persistent vasomotor paralysis to apathetic dementia.

With reference to cases of simple stupidity from exhaustion, it is still to be noted from a diagnostic standpoint that the original affect which acted as a cause may manifest itself now and again in the course of the disease, even though it be in the form of delirium.

CASE 15.

R., aged 25, overseer; was admitted into the psychiatric clinic June 15, 1887. The parents were said to be healthy; a sister epileptic without cause since the age of puberty. The patient was well endowed, industrious, good, and always of very gentle and sensitive character. He had had no severe diseases. Every spring he was accustomed to have profuse epistaxis. This did not occur in 1887. For some months the patient had overworked and had had many troubles. On the evening of June 12th he had a violent dispute. He came home disturbed, said little, stared straight before him, and to overcome his depression went to a *café*, drank about three to four liters of wine, and had another unpleasant dispute. The night of the 13th he did not sleep, being always preoccupied with these troubles.

On the 13th he went to work, but he had to be brought home, for he did nothing but look straight before him. He was pale and did not speak.

The night of the 14th he was sleepless and wept about his trouble. On the 14th he lay quiet and silent in bed. The night of the 15th he became apprehensive and asked for a priest.

Admitted the same day, he was pale, without fever; pulse small, contracted artery; exhausted, confused, and had no idea of time and place. He thought he was in prison, although he had not been accused of anything. To repeated questions he gave only short answers in a low, hesitating voice. His attitude was relaxed, broken; the eyes wide open, glance fixed, the pupils wide, reacted lazily; pulse, 72; respiration superficial and rapid. The patient of medium size, reduced in general condition; examination of vegetative organs, negative. Cranial circumference, 54 centimeters. Rhombocephalic (right diagonal diameter, 12 centimeters; left, 13 centimeters); prominent parietal eminences; no signs of rickets.

Thereafter the patient seemed inhibited, lost, confused, and unconscious of his surroundings, staring straight before him, silent and devoid of all initiative. He had no emotional feeling, except that he was occasionally apprehensive. At first sleep was wanting, but occurred after the administration of paraldehyde. On the 23d the patient became brighter mentally, his expression more lively, and his voice stronger. He said that on the 13th, after a violent distress, he had become completely confused; since two days he was better in his head. He had only a summary recollection of the time of his sickness, and thought he had been crazy for two days. On the 30th, after a profuse bleeding at the nose, the patient became mentally free, and his expression was in accord with this. He said that in a state of apprehensive confusion he could not straighten himself out nor think properly. The external world seemed changed and incomprehensible to him. He had headache and vertigo. The patient could report nothing indicating hallucinations. Discharged recovered, July 10, 1887.

(c) Stupidity Due to Mechanical Shock.

Following manifestations of cerebral concussion, and directly developing out of them, there are sometimes conditions of profound mental torpor which may go to the degree of absolute absence of consciousness of the personality, called psychoses due to traumatic concussion, and which may be regarded as a protracted form of commotion of the psychic organ, after the functions of the subcortical and automatic centers have been restored. These conditions of the cortex probably depend upon disturbance of molecular condition resulting from trauma. Functionally they may be regarded as inhibitory processes affecting the psychic organ, just as, according to modern investigation, cerebral concussion represents an inhibitory cerebral neurosis. Similar conditions may arise from strangulation.

Stupidity in these traumatic cases seems to be the cumulative expression of inhibitory processes in the various territories and centers of the cortex; at least in classic cases variation of the intensity of the functional loss in various centers, and variation in the restoration of the function of affected territories, are observed. The prognosis seems favorable.

In five cases of personal observation recovery occurred. In two cases there was termination in mental weakness. Careful management and watching during convalescence seem to be the most important points in treatment.

Case 16.

On June 10, 1887, H., farm-laborer, aged 29, of Steicrmark, was admitted from the surgical ward of the hospital at Gratz, with the note that "He does not seem to understand questions nor to comprehend; says his name is Franz Mehlmauer; has no fever; pulse, 64; no vegetative anomalies." The left cheek is black and blue, the right ear full of blood-clots, but the ear-

drum is uninjured. On walking the patient staggers like a drunken man, and he sits in stupid quiet. Temperature, 36.8° to 37.4° C.

The night of the 14th he got up and ran out in his night-clothes in the court, where he was found covered with filth, and was transferred to the psychiatric clinic. On the morning of the 15th I found him stupid. He slept much, yawned frequently, and presented a sleepy, stupid expression. He hears and sees, but misunderstands impressions made on him. He answers questions incomprehensibly, takes the food offered him, gets out of bed staggering to satisfy his needs, but is quite confused, and cannot find his way back to bed. Skull normal, without traces of injury and not sensitive to percussion; no congestion, no symptoms of irritation, and no vomiting; temperature on the morning of the 15th, 38.4° C.; evening, 38.2° C.; on the 16th, 32.4° C., and thereafter normal. Pain-sense normal; extreme movements of aversion to being touched, though badly carried out. The patellar reflex is wanting; pupils of medium size, equal, and reacting normally.

Patient sleeps almost constantly on the 16th, and has to be forced to do everything. Want of all spontaneity, but his notions of movement are quite intact. The patient gives no attention to the external world. When a needle is brought near his eye he makes no movement of the lid. When the eye is touched, the lid-reflex occurs. On the 17th the patient is somewhat freer and shows indications of attention and spontaneity; gait to-day surer. Patient begins to speak. He has ataxic aphasia. A silver gulden he calls "josel." He understands a question about his feelings. "I do not feel so very bad; I fell three years ago." He reaches after objects with interest, but does not know their significance, and is word-deaf and word-blind. The patellar reflex, absent until now as an accompaniment of the general inhibitory state of the brain, is prompt, remains the following days somewhat increased, and then becomes normal.

On the 21st otorrhea of the right ear; the optic and acoustic centers resume their functions. Patient is still aphasic.

It is learned to-day from legal documents that the patient had received a blow on the head given by one of his companions with a stick of wood; that he fell immediately unconconscious, and bled from the right ear. Later he vomited food and bloody mucus. On the left temple there was marked effusion of blood. The physician summoned found the patient in "coma"; pulse, 80 to 84; temperature normal; the corner of the mouth drawn to the left. On the 8th of June the patient was examined by the police physician. He found him conscious, but capable only of inarticulate sounds.

June 24th the patient became much brighter. He recognized the hour, became freer in speech, and seemed less aphasic, but he was still confused. On the 26th he thought he was at home, and in his reckoning of time he had not gone beyond the 4th or 5th of June. He knew nothing of the blow on his head. He understood all questions and the meaning of all objects shown him, but he could not in many instances call them by name (amnesic aphasia). He could remember the events of the day before—examination in clinic. On the 28th he is freer, but his thought is still difficult and slow. Aphasia disappears. Now, as before, no memory of the time of the accident and of his sickness.

July 2d his power of comprehension of time and place returns. The memory of the blow and the circumstances returns in all details. He feels perfectly well.

July 14th the patient says, in speaking of his memory of past events, that immediately after the blow he became unconscious. It was only on the 10th, after being brought to Gratz, that he came to himself; that he noticed he was going through a town, but he did not recognize his sister and a companion who accompanied him. After that, he lost his senses again. From that time until June 23d he had no memory of anything except that he was constantly dizzy, sleepy, and had headache when he lay on his right side.

June 22d he had suddenly noticed that food was put before him and that he was in bed. On the 23d and 24th he had asked of those about him where he was and what had happened to him. Gradually he had been able to recall all that had taken place. Careful observation and examination thereafter show no mental, and, in general, no cerebral disturbance; so that the patient was discharged recovered on July 20th.

CHAPTER IV.

Primary Hallucinatory Insanity.

THE states of hallucinatory insanity now to be described rest essentially upon the same foundation as the disease-picture of stupidity described in Chapter III: *i.e.*, upon functional exhaustion, upon asthenia of the nervous system (asthenic psychoneurosis). The difference is that the cerebral exhaustion does not reach the degree of complete arrest of mental processes, except episodically; and that in the exhausted brain irritative processes go on essentially in the sensorium, though occasionally also in the psychomotor areas of the cortex. Under the term hallucinatory insanity employed by Meynert the following description comprehends all the psychoneuroses based upon functional exhaustion and weakness in the higher psychic activities of attention and judgment, the principal symptoms of which are hallucinations, and delusions arising, for the most part, out of them, accompanied by consequent anomalies of feeling and action.

The conditions necessary for the origin of this delirious disease-picture are essentially the same as those of febrile and inanition delirium, especially disturbances in the nutrition of the cortex; and the fact is that such conditions of hallucinatory insanity not infrequently arise out of febrile diseases and are postfebrile psychoses. The transitions from the usually temporary delirium which occurs as an accompaniment of febrile processes (*comp.* page 176) to the asthenic postfebrile protracted psychoses are, at any rate, easy.

The more the disease is separated from or outlasts the causal somatic malady or arises in the course of convalescence from a delirious state, the clearer it appears as an independent, peculiar process in course and symptoms.

The reason that such a disease-picture should take on a protracted and independent form probably lies in a special predisposition of the brain subjected to a general disturbance of its nutrition (fever, inanition).

These predispositions are alike in this: the brain subjected to the disease process is unusually easily exhausted and lacking in resistive power. This irritable weakness may be founded on a neuropathic and frequently hereditary constitution, not infrequently accompanied by tangible signs of rachitic hydrocephaly; it may be acquired as a result of mental and physical strain; it may be due to alcoholic or sexual excesses, or to chronic diseases which interfere with general nutrition (gastric diseases, anemia, suppuration), frequent childbearing, lactation, etc.

It is clear that, upon such a foundation, exciting causes, like childbed, hemorrhages, fever, and other acute and grave affections of the organism, induce nutritive disturbances in the cortex that do not disappear immediately, but rather cause profound and lasting disturbances of the psychic functions.

A great part of the so-called postfebrile psychoses, and in general those that develop after acute exhausting diseases, belong in this category. Especially to be mentioned are cases of hallucinatory insanity developing out of malarial cachexia lasting months or even years, and cases of hallucinatory delirium with confusion arising during an attack of acute articular rheumatism lasting three to six weeks, and continuing thereafter. In this class also belong states of postfebrile insanity after pneumonia, which is especially prone to develop in drinkers; and finally the numerous psychoses that develop during convalescence from typhoid fever (*comp.* "Etiology"). Not infrequently states of inanition during imprisonment are of this nature (prison insanity). Too, a large number of puerperal psychoses, for the most part regarded as mania, belong here. (Hallucinatory insanity—Fürstner.)

From a purely symptomatic standpoint, the specific alcoholic delirium of persecution should be placed in this category (*vide* "Chronic Alcoholism," insanity of persecution), and the protracted delirium of epileptics and hysterics as well, especially when it occurs as an equivalent.

Melancholia and mania developing upon the foundation of an exhausted brain, and the episodic states of hallucinatory confusion in paranoia, which are not very infrequent, belong strictly in this class. At the height of these states induced by sleeplessness, refusal of food, and extreme expenditure of vital force with insufficient

restitution, we observe independent conditions characterized by hallucinations and delirium of inanition, which for the time being push aside the picture of melancholia, mania, or paranoia; and it is only with improvement of the general condition that the original form of disease again makes its appearance.

The disease-conditions treated here as primary hallucinatory insanity correspond, for the most part, with the acute primary insanity of other authors (Westphal), hallucinatory confusion, hallucinatory mania (Mendel), and delusional stupor (Newington).

The stage of incubation of primary hallucinatory insanity is short, seldom longer than a few hours or days; but, of course, symptoms of nervous exhaustion and irritable weakness have often preceded the outbreak for a long time.

Almost constant symptoms of the developing disease-picture are sleeplessness, or unrefreshing sleep with anxious dreams and frightful awakenings; nervous excitement, irritability, anxiety, headache, vertigo, depression, and inhibition and confusion of ideas, with some desultory hallucinations.

The progress to the height of the disease is reached quickly, with multiplication of hallucinations. The principal symptoms at the height of the malady are, at any rate, errors of the senses, both illusions and hallucinations; in acute cases especially they are visual, then, in order of frequency, auditory, and finally sensory, olfactory, and gustatory. Not infrequently they occur in all the senses, and are so numerous that there is quickly a decided clouding of consciousness. The patients are confused and have no idea of their situation.

In acute stormy cases there is a kaleidoscopic variation of hallucinatory and illusional situations. In cases that are more chronic in their course the errors of the senses are not so numerous, and more episodic; so that there may be delusions of some duration with logical connection.

The content of the delusions is extremely varied and changeable. There may be delusions of persecution, poisoning, sin, hypochondria, eroticism, religion, and grandeur, in content like those of the paranoiac, but always without any system. These delusions almost exclusively develop out of errors of the senses, or they may be primordial. It is only occasionally that they represent the allegoric interpretation of sensations.

The patient lives in delirious situations, anxious, troubled, irritated, or astonished, as a result of the momentary content of his troubled consciousness. He thinks himself for a moment possessed,

a saint, God, the emperor, etc., and for a time develops a logical idea out of the errors of the senses and delusions; but he never goes so far as to create a formal system of delusions, or a lasting alteration of the personality in a delusional sense.

In severe cases, and in an episodically profound state of exhaustion, delusions of grandeur may predominate. In other cases the delirium is concerned almost exclusively with frightful situations. A differentiation of disease-pictures according to the content of delusions, possible in paranoia, seems here unnecessary and inappropriate, if not impossible.

A further important clinical fact is the disturbance of consciousness of the patient: his lack of orientation with reference to place and time. This explains the confusion of the speech and acts of such patients.

This confusion is essentially to be referred to the two fundamental series of symptoms of the disease-picture: the functional weakness of the intellectual organ; the overfilling of consciousness with errors of the senses.

The first disturbance seems especially to affect apperception and the processes of judgment. The power of apperception of the exhausted brain is in part simply enfeebled temporarily, even to the extent of true mental blindness and deafness; and in part this faculty is interfered with by the patient's loss of attention, due to the great number and extremely lively and constantly changing illusions and hallucinations.

Since the perception of sense-impressions from the external world is not impossible, but largely merely distorted in consciousness, and since purely subjective sensations occur with those that are objective and partly correct, confusion and lack of orientation must necessarily arise, which, for this form of mental disease, are characteristic.

Along with the disturbance of apperception, however, there are others still more important in their effect upon the course of ideas: the constant penetration of delusions and errors of the senses into the developing course of thought, which in itself may be logical; as a result of which the thread of thought is constantly interrupted, and new and disparate combinations of thought are created. Too, there is the tendency of the weakened mechanism of association to connect ideas mainly in accordance with simple superficial similarity of sound, thus giving rise to the most strange thoughts. In addition to all this, there is still the grave enfeeblement of the power of judgment, which is an expression of the functional weakness of the brain.

This explains also the important fact that the enormous amount of hallucinatory and delusional material undergoes no logical valuation or combination into a systematic delusional idea.

However, the disturbance of consciousness in hallucinatory confusion is not so deep as that which occurs in stuporous patients; and thus is explained the fact that, aside from episodes of actual stupor, the patient possesses comparatively correct recollection of the delirious events of the disease; indeed, during periods of remission, and with a return of correct apperception and temporary power to judge of his disease, the patient says that he is crazy, subject to somnambulism, talks of going insane, of the asylum, or of being bewitched, possessed, or hypnotized.

The very lively emotional feelings and affects which often occur in the course of the disease-picture are reactions to the primary errors of the senses and delirium. In accordance with the rapid change in the content of these, they are accompanied only by very temporary and changeable states of feeling. Since frightful hallucinations and persecutory ideas usually predominate, there is most frequently anxiety and depression. Whether feelings of apprehension occur spontaneously in these patients is scarcely to be determined. Not infrequently, based upon the frightful subjective processes and hostile apperception, there is great irritability, dangerous violence toward others, even attempts at suicide, and desperate efforts to escape. Frequently there is refusal of food in connection with ideas of poisoning and errors of the senses. Just like the emotional reaction, the acts of these patients are purely reactive phenomena. The acts seem quite as abrupt and disconnected as the delirious ideas which cause them. Owing to the confusion of the patients, they are, like those of delirium in general, largely without purpose and distorted. The course of the disease is characterized by remissions and exacerbations. The former occur often quite unexpectedly, and may be characterized by relative lucidity. The latter are often related to new enfeebling causes, such as continued sleeplessness and refusal of food. Almost without exception, in women the menstrual processes lead to such a result, even when the menses do not occur and the loss of blood is not a weakening causal factor.

During periods of diminution of the symptoms of irritation (errors of the senses, delirium) there is the clinical picture of cerebral exhaustion, with weeping or irritability as emotional anomalies.

As an episodic condition in severe cases there may be stupor lasting some weeks, or maniacal states lasting from a few hours to a day. The latter conditions may resemble the picture of severe

mania in the form of cerebral irritation, but there is no pronounced flight of ideas, and they may be regarded as states of psychomotor cerebral irritation, since they are usually accompanied by verbigeration, automatic cramp-like movements, whistling, grimacing, etc. Occasionally under such circumstances there may be tonic and clonic convulsions, cataleptiform and ecstatic states (catatonia).

The more or less pronounced affection of the general organism in this state manifests itself in the profound reduction of general nutrition, the subnormal temperature, and the reduced turgor vitalis; in the weak, easily compressible pulse, and the cessation of the menses at the height of the disease. In a case observed by the author, in a woman, the weight on admission was 43 kilograms as compared with 61.2 kilograms when discharged. Not infrequently there is inanition, with tremor of the tongue and extremities. At the height of the disease sleep is almost always disturbed.

The duration of the disease is, on an average, several months, though it is not rare to see abortive cases ending in a few days or weeks. On the other hand, some cases last a year or more. The cases of shortest duration are, in general, those of menstrual or postfebrile origin. The puerperal cases have a duration between the two extremes.

The possible terminations of acute hallucinatory insanity are recovery, transition to incurable mental weakness, and death. The prognosis is quite favorable. Recovery resulted in over 70 per cent. of my cases.

As a transitional stage to recovery there are delirious periods of cerebral irritation, outlasting the states of exhaustion, usually accompanied by irritable emotional states; in severe cases a state of stuporous exhaustion may form the transition to recovery. Meynert has seen the disease pass to recovery through states of a manaical nature. He assumes that the mania due to functional hyperemia with increase in rich arterial blood acts as a means to restore the exhausted brain that has been attacked by hallucinatory confusion (anemia).

Termination in incurable mental weakness depends upon the fact that the exhausted brain is no longer able to re-establish its normal nutritive condition, and retrograde changes that finally end in atrophy of the cortex take place. As a result of this there are lasting deficiencies in psychic activities, and the brain becomes progressively less capable of correct apperception and the formation of correct processes of judgment, in spite of the fact that delirium and errors of the senses become less frequent and fade.

Under such circumstances the emotions and acts become progressively more feeble and fragmentary; thus gradually a state of lasting general confusion results.

A transition to systematic paranoia I have never yet observed. Theoretically it is not conceivable, for, at the height of the disease, the exhausted brain never becomes sufficiently restored to form a logical valuation and association of delusions; but, when the course of the disease is favorable, the false ideas are quickly corrected, and errors of the senses retreat into the background. To regard the disease-picture as an acute paranoia is therefore untenable. In such cases the process is—genetically, clinically, and from the standpoint of prognosis—quite different, and therefore requires a special designation.

Fatal termination is possible as a result of progressive exhaustion and a final state of inanition like that of acute delirium. It may be pneumonia, or especially pulmonary phthisis favored by reduced nutrition and insufficient respiration, that finally overcomes the exhausted organism.

States of acute hallucinatory insanity may present differential diagnostic difficulties in respect to mania, melancholia, and the acute delirious episodes of paranoia.

With regard to mania it may be said that upon the foundation of cerebral exhaustion there may be disease-pictures which resemble very closely those of hallucinatory insanity, since there may be here numerous errors of the senses and inanition delirium which temporarily predominate. On the other hand, in acute hallucinatory insanity, as a reaction to the delirium, there is often very lively motor unrest, complicated also by manifestations of psychomotor irritation, which easily simulates maniacal states, and which also occurs episodically as a complication (mania menstrualis), and finally as a transitional stage to recovery. In relation to the first condition it should be remembered that symptoms of genuine motor impulse and actual flight of ideas are foreign to the picture of acute hallucinatory insanity; that the anomalies of emotion and motor activity are reactive manifestations, and that motor activity appears upon the scene not so much as a purely automatic motor impulse as a distinct act dependent upon delirium and errors of the senses.

The episodic or final mania is recognized as an episode by a careful consideration of the general course of the case. Acute hallucinatory insanity may also appear to be active melancholia: the anxiety due to frightful delirium and errors of the senses is mistaken for a symptom of active melancholia. In this case, also, consideration

of the course, and the fact that agitated melancholia is only an episodic exacerbation of a disease-picture due to inhibition and primary psychic pain, will permit the differentiation. From paranoia, acute hallucinatory insanity is differentiated by the important characteristic that in hallucinatory insanity, even when it lasts a long time, there is no systematization or logical combination of the delusional ideas into a formal delusional structure. It must be admitted that now and then, especially during periods of remission, and in chronic cases of hallucinatory insanity, the patients draw some logical conclusions based upon delirium and errors of the senses, and that there are series of delirious ideas which are brought into relation; but this is only accidental, episodic, and not regular and lasting as in paranoia. Method is wanting in acute hallucinatory insanity. The delusions remain disconnected masses of ideas and form a pure hallucinatory delirium; with that there are also the profound disturbance of consciousness and the formal process of thought, and also sudden change of delusions. The manner of development is also decisive: acute hallucinatory insanity develops quickly, while in paranoia the stage of incubation of suspicions and premonitions lasts months or years. It is only the conditions of hallucinatory delirious confusion, which not infrequently occur in the course of paranoia, that present difficulties and allow the condition to be mistaken for the disease-picture of acute hallucinatory insanity. Knowledge and appreciation of the general course of the disease, under such circumstances, will make the case clear.

The most important therapeutic indications in acute hallucinatory insanity arise out of the asthenic foundation of the disease, as is clearly shown by the etiology and the clinical picture itself. It is only when these indications are fulfilled that the diagnosis is favorable. He who treats his patient by bloodletting, purgation, insufficient food, leaves him to himself, or employs counter-irritating ointments and the like, will have very few favorable results.

Prophylactically, in considering and overcoming asthenic conditions during febrile diseases and the puerperium much may be done. When the disease has manifested itself, the most important thing is good nursing and nourishment. The patients must be kept in bed, and supplied with fresh air and abundant nourishment. Meat, milk, eggs, and wine are demanded by the causal and symptomatic indications. In a severe case complicated by the taking of insufficient food I have found Leube's enemas of meat and pancreas of decided value. Albuminuria and menstrual hemorrhage are to be considered and treated. Sleeplessness, which is often obstinate and exhausting, is

best overcome by beer, wine, alcoholics, and occasional doses of chloral; and, when nutrition is better, with lukewarm baths. When there are states of profound inanition, opiates, best in connection with quinine, which also acts as a tonic for the brain, and in great necessity camphor (also subcutaneously) in connection with opium, may be useful to overcome excitement and sleeplessness.

CASE 17.—Postfebrile acute hallucinatory insanity.

M., aged 37, single, shoemaker, of healthy family; not a drinker, but he has always been weak; his skull is rachitic and hydrocephalic (circumference, 59 centimeters). He has passed through a febrile disease without delirium in the last five weeks, probably typhoid. Discharged from the hospital a few days ago, and returning to work on March 12, 1887, he became confused, delirious, and ran out in the street, where he stared fixedly before him, and to questions said that he was in eternity. Taken by the police, he became anxious and expressed fear of punishment because he had led a bad life of immorality. When received at the clinic on March 14, 1887, the patient was delirious, confused, and wanting in orientation. He took the physician for the Prophet Elias, and on his knees begged him to save him from thunder and lightning, as he was an honorable man. Then the patient passed into a state of astonished staring, and it was necessary to speak to him repeatedly before he understood. He related that the day before the Virgin Mary appeared to him. He had vowed to become a martyr, for the priest had told him at confession that he should not live with women, and thus would attain Heaven. The patient prays and kneels frequently, is quite ecstatic, and looks at the ceiling. He is entirely absorbed in errors of the senses, and sleeps little. It is learned that the Virgin Mary appears to him constantly. She tells him that her Son had been tortured. The patient takes colored spots on the wall of his cell for the place where Christ was murdered. Christ also appears to him and sings him heavenly songs of martyrdom.

The patient is often in ecstasy. At times he appears to be apprehensive. As a motive it is learned how some one appeared to him and demanded his soul, because otherwise he would not go to Heaven. The patient had to sign and then blow on the paper.

He then went to Heaven and asked God to give him back his soul, which was done. Then he felt relieved and happy again. On the 16th the patient was used for a clinical demonstration. He thought he was in church or before the court. He took the students for Apostles, and the professor for God, and that he was not worthy enough to sit near him, asking God to save him from the punishment of imprisonment. With good nights (paraldehyde) and good food the patient's mind rapidly cleared up, and he passed on to convalescence. He had perfect memory of all the events of his disease, said that everything was imagination, and that the cause of his mental disease was that after his fever he returned to work too weak and too early. Discharged recovered, April 14, 1887.

CASE 18.—Acute hallucinatory insanity.

D., aged 34, cabinetmaker, on May 7, 1881, became confused and was brought to the clinic. Father died of cerebral paralysis. As a child the pa-

tient was weak and sickly, but well endowed, of gay disposition, and not bigoted. He married at the age of 24, had five children, all of whom died, the last of convulsions on January 17, 1881. The latter was his favorite. At his death he had a cataleptic attack, and remained several minutes pale, staring before him. Cold applications brought him to himself. Since this time he has been depressed and sorrowing over the loss of his child, and often he has felt boring pain in his head when thinking of him. The condition, however, remained within the limits of physiologic depression. The patient became miserable, ate and slept little, felt tired, and was fatigued easily at work, but kept at his employment and comforted his wife about their loss.

On account of increasing physical weakness, he now, in contrast with his usual habit, drank more wine, without, however, becoming intoxicated. He read much in religious books to gain encouragement, even late into the night.

From the middle of April there was bad sleep disturbed with unpleasant dreams, oppression, nervous unrest, and inconstancy. He became very irritable and quarreled with others about the comprehension and significance of certain passages in his religious books.

April 28th, after a sleepless night, hallucinations developed: patient saw hell open and shut, saw condemned souls, then again Heaven opened, and he thought that he had become a child. At times he was apprehensive and weeping; at other times joyfully excited. He slept no longer, and finally said that he was God, who was in him and spoke through him. He said that he was no longer alive and that if he were alive he would not exist. To those about him he promised eternal happiness and blessedness.

The patient goes about confused, with no idea of place, his expression disturbed, and with weeping, apathetic manner. In a confused way, and with affected speech, he speaks of fights and frightful vision which he had had, with internal pains in his chest and feelings of anxiety. He soon became irritable, threw his spoon at other patients, saying that no one should come near him, and tore the bedclothes off the bed. He is full of illusions and hallucinations, and passes the two following nights without sleep, presenting mainly a religious expansive delirium, intermingled with demoniac ideas. He suddenly mistakes the physician for Satan, and cries with a voice of thunder: "Away from me." He becomes aggressive, and it is therefore necessary to isolate him. He happened to be seen holding in his hand a hair which he had found in the bread, and saying that it was a hair of his departed father; at night he is very restless and has innumerable hallucinations of sight (sleight of hand, shadow-pictures, biblical forms on the wall the size of children).

The patient is of medium size, much reduced in general health, pale, and anemic. The tongue shows the tremor of inanition; the pulse is small, poorly filled, and 108; no fever, no vegetative disease, and no signs of degeneration.

The patient slept the night of April 9th after morphine and chloral. The 9th he is quieter and less confused, but he refers to evil spirits which he saw yesterday, to Satan who sat at table in the form of an orang-outang, of the sacrament which he had partaken of, and wonderful flames of fire which he had seen on waking up. With good nights and rich food the mind clears up rapidly and the hallucinatory delirium disappears.

As early as April 12th he had some idea of his past condition.

The patient finds the cause of his disease to be sorrow at the death of his last child and diminution in his ability to earn money in his occupation. Too,

he had eaten very little, slept poorly, and been reduced in strength, always increasing in his preoccupation with religion and in drinking. One day, the 17th of April, everything seemed to him to be changed. The nature of time seemed altered. At one time the night, at another the day, seemed too long. One day he found a picture-nail, then later a board was dug up in the court which had a cadaveric odor. The flowering trees seemed changed to him. The sun shone peculiarly when setting, and various objects had a cadaveric odor. About April 28th one night he noticed the ticking of a wall-clock which did not exist, and he thought that the last hour had come. He saw flames, hell open, the condemned, and confessed and took communion on the morning of the 29th. He was constantly more confused, and the following night saw innumerable Satanic forms. He lost all courage, especially because his wife seemed very strange to him. Everything seemed to be distorted. He thought of the end of the world, of the last judgment, and he had constantly the odor of putrefaction in his nostrils. Then there were pleasant odors. It seemed to him as if the old saints were rising from the dead; as if he were attached to the earth, which was whirling through space. He had divine visions and delirium; thought himself one with God, but occasionally heard anxious voices calling.

The patient relates, further, that on account of care for his young children he had abstained from intercourse for three years, substituting onanism for it. No epileptic antecedents. The patient is still exhausted, complains much, and is easily frightened. He soon gains complete insight into his disease, and recovers quickly with good nursing, and is discharged cured June 27th. The recovery has been maintained.

CHAPTER V.

Secondary Insanity and Terminal Dementia.[1]

THE sad termination of all psychoncuroses that do not go on to recovery is a progressive destruction of the psychic existence, a disintegration of the personality, up to that time a unit historically and in content. This tragic process of psychic decay before physical death sometimes takes place with extreme rapidity, especially in furious mania; sometimes it occurs very gradually. First the ethic and then the intellectual faculties, especially memory and logical powers, become defective, until finally the faculties of apperception and associated affective manifestations have disappeared; and of the former being, as an example of human existence, there finally remains only the physical hull, with its automatic and purely vegetative functions.

The physiognomy of the patient gives an early sign of the oncoming psychic destruction. It takes on a peculiar, distorted char-

[1] Incurable terminal stages of the psychoneuroses—states of secondary psychic weakness.

acter, partly due to inequality in the innervation of the homologous groups of muscles; partly due to contracture in the muscles of expression. As result of this the physiognomy becomes somewhat aged, distorted; and with the changed and strained condition of the eyes, which renders the glance peculiarly fixed, there is something wierd in the facial expression.

With the occurrence of the stage of dementia the physiognomy, in which there is no longer any emotional expression and no evidence of psychic activity, takes on a negative, empty character.

The disturbance of sensorial, vasomotor, and vegetative functions, so often evident in states of affective insanity, disappears in these states of psychic weakness. The vegetative processes, sleep, nutrition, etc., present no decided disturbance when there is no co-existing somatic complication.

On the other hand, there are many forms of trophic disturbance the significance of which, as yet, is more or less imperfectly understood, the general effect of which, however, is comparable with that of precocious senility; for these patients look older than they actually are. These dystrophies and atrophies express themselves especially in precocious grayness of the hair, disappearance of subcutaneous adipose tissue, dryness and defective freshness of the skin, with slow circulation in the capillaries, tendency to edema, pityriasis, hematoma of the ear, fatty degeneration of the organs (especially the heart), and precocious arteriosclerosis.

This, in part, explains the marasmus and the reduction of the average length of life among insane patients. It seems almost impossible in these individuals, who present qualitatively and quantitatively the most varied pictures of psychic disintegration, to distinguish general clinical disease-pictures. However, two fundamental states may be differentiated:—

1. Secondary delusional insanity.
2. Terminal dementia, with its two clinical varieties: *(a)* Agitated. *(b)* Apathetic.

1. Secondary Delusional Insanity.

Under this heading may be grouped all the psychic conditions in which the duration of ideas developed in a primary affective insanity continue to exist, after the disappearance of the affect which accompanied their origin, as a lasting error of the understanding, as a more or less stationary abnormal group of ideas; and thus they make up an entirely new personality and entirely different relations of life from those which characterized the former normal ego.

At the same time there exists, however, another important disturbance: the absence of impulse to act in accordance with the delusional ideas still present in consciousness.

There is especially absence of the peculiar accord of feeling, thought, and will which characterizes affective insanity. The unity of the psychic personality, the ego, is never retained. The united historic ego is divided up into as many egos as there are groups of delusional ideas, and it is vain to attempt in this disintegration to bring into even the most superficial relation these delusions, whose content may be completely contradictory and diametrically opposite to the laws of time, space, logic, and experience.

This striking absence of desire to explain the differences, to account for the contradictions, indicates a profound weakening of all the higher intellectual faculties: judgment, logic, and often also memory.

Intellectual activity, such as was possible before the disease, or objective and creative activity in accordance with a plan, is thus impossible. The patient moves within the circle of his fixed ideas; and his idea of self and the external world is totally changed.

To be sure, the patient is still able to converse to some extent, for the mechanism of formal thought still remains and is no longer disturbed by emotion, and, too, because he still has at command numerous remains of his previous normal life; but of real intellectual sharpness and humor there can no longer be any question. A well-ordered mental activity is impossible in a case of secondary insanity, because, with abnormal insistence, the individual always returns to the circle of his fixed ideas and is forced to think in it.

The ethic indifference and emotional defect of this category of patients is especially striking. The whole past life, with its emotional relations to the family and friends, has become quite foreign; and they are quite as insensitive to the welfare of those about them. It is only that which directly concerns the nucleus of their delusional ideas, whether it be favorable or unfavorable, that can still, at least in the beginning, induce emotional reaction; but in the course of time the emotional excitability for even the circle of abnormal ideas disappears, and indefinite delusions, darker in their significance for consciousness, finally become incomprehensible and are reproduced without emotional accompaniment, as soon as external impressions or processes of association call them into consciousness.

In the most extreme degree of secondary insanity (in transition to general confusion) there is a senseless and disconnected appearance and reappearance of ideas in consciousness which are imper-

fectly held together by the unity of the fixed idea. In such insane persons there are still frequently hallucinations, or at least lively ideas which recall constantly the circle of delusional ideas; but here also there is weakness—there is no longer anything new produced, in contrast with the actively creative fantastic and logical delusions which occur in affective insanity and in primary delusional insanity.

The delusion of the secondary maniac remains dead, incapable of any essential modification of idea, which, with the progressive deterioration of mental life, is reduced more and more to a mere phase, to an indifferent content in which there is no longer any impulse to realize that which is felt and thought in delusion.

Secondary insanity is the ordinary termination of melancholic insanity with delusions if it does not pass on to recovery; much less frequently secondary insanity is the termination of mania, since in mania, owing to the rapid course of the psychic activities, the fixation of delusions and their systematization are only rarely possible.

Such conditions of secondary insanity remain sometimes for many years at the same stage, until finally mental weakness takes more and more the upper hand, and delusions become less and less definite in content and form.

Recognition of such conditions as of secondary nature may present difficulties, when the previous history of the cases is not at hand. However, prolonged observation will reveal particular features. The increasing emotional defect, the predominant confusion and incoherence of mental life, and the want of all ethic and social ideas (uncleanliness), which may go on to the degree of mere animal mental activity, lend distinctive characteristics.

In cases that terminate melancholia there are remains of delusional ideas, occasionally states of apprehension, raptus, and other evidences of the primary stage; in cases terminating mania, there are maniacal relapses, which, even in the advanced stages of dementia, may make their reappearance.

CASE 19.—Furious mania; termination in secondary insanity.

G., peasant, aged 29; her father was insane and is said to have been peculiar and irritable from his childhood. Early in 1876 she married. Without any known cause, after a melancholic attack of two weeks in the beginning of August, 1876, she became maniacally excited and rapidly became furious. The patient commenced to pray, sing, destroy, and to undress herself.

On admission she was in a state of great exaltation, spoke high German, preached improvised sermons with pathos, spoke in biblical sentences, and catechised those around her. In this there was alliteration and rhyming: "Der Himmel ist ein Schimmel, der Schimmel ist ein Lümmel, Alles soll klingen und singen und springen."

In her expansive ideas there is the nucleus of erotic religious delusions. She is the Queen of Heaven, the Virgin of Infinite Health, full of desire and strength. All about her is wonderful in beauty. All should rejoice with her—she has lived all things, is a child, a maiden, rich and poor, distinguished and unknown; she has put out the fires of hell and purgatory, and delivered the whole world. God the Father and God the mother have shown themselves to her in clouds. The patient dances, sings, cries, and claps her hands with joy.

Ears small, badly differentiated; pupils dilated, reacting lazily. Pulse, 100; bad nutrition; evident anemia; uterus without abnormality.

The patient is sleepless, easily congested, salivated, dances, prays, sings, is erotically excited, likes to undress herself and arrange her hair, and urinates on the floor at the time of the visit.

She has borne five children, one being the Saviour. She is the Queen of Heaven; she takes those around her for divine personages; has numerous auditory and visual hallucinations, is occupied with joyful feelings, and from time to time falls into states of ecstasy in which she prays.

Treated with chloral and potassium bromide (8 grams) and isolation, the maniacal condition diminishes, but there remains a marked state of increased feeling of self, expressed in affected literary language and affected manner, and the delusions remain uncorrected. The patient becomes quiet, occupies herself with handwork. Only at the time of the menses is she excited, praying and acting as if she were Mary the Queen of Heaven and had given birth to the Saviour. She mistakes those about her for harlots and the devil, and rages and becomes aggressive toward them.

There is a progressive development of a condition of erotic religious insanity, which becomes more and more evident. The delusions become more and more confused. She was an angel, had laid eggs upon which she lived, was father and mother at the same time. When she was an angel she had carried St. John into the presbytery, where he had eaten to the amount of thirty pieces of silver. She had risen six times to Heaven and had assisted six times at the consecration of an emperor. Maria Theresa was her grandmother. The angels in Heaven were made of gold and precious stones. When she came back to earth she became a porcupine. She herself is holy and has given birth to five angels, etc.

Former normal relations of life have become foreign to the patient. Her present delusions are no longer associated with lively emotional states. It is only when she is contradicted or questioned that she becomes angry and says that her questioner is Lucifer the enemy, heaps invectives upon him, and calls down upon him divine anger, to suddenly fall into silly laughter and eroticism. Usually she is quiet with affected manners. The affected speech in high German, the inclination to adorn herself in dress and hats, indicate the deep mental disturbance. Logical foundation and connection of delusions, which are, for the most part, based upon ecstatic visionary states and hallucinations, do not exist. During the last two years the patient has produced nothing new; on the contrary, her delusions have become more and more imperfect, fragmentary, and less easily excited. A progressive state of mental weakness is unmistakable.

2. Terminal Dementia.

The final results of psychoses which do not go on to recovery, if the patients live long enough, are states of dementia. They are the expression of organic changes in the cortex which are comprised in the term atrophy.

In accordance with the nature of the anatomic process, the dementia may come on with great rapidity, as after severe furious mania, or gradually in the course of years, as in the final stage of paranoia. Clinically there are innumerable variations with reference to the intensity and extent of psychic weakness up to apathetic dementia.

In the concrete case we must examine the various functions of intellectual life, especially the kind and extent of the ethic and esthetic activities; the keenness of judgment and logic; the degree of want of energy of the will; the rapidity or slowness of apperception, combination, and action; the power of memory with reference to its various qualities, and thus establish the measure of the degree of mental weakness. Slighter degrees, such as occur not infrequently, especially after severe melancholias and manias, frequently escape observation. Slight lowering of mental power often does not show itself in the asylum, where the recovered patient is strikingly above the level of other patients and accustomed to his surroundings; and it only becomes clear when the recovered patient is discharged and tries to employ his restored force in public and professional life. The more difficult and the higher the station in life, the more clearly does the loss appear which the patient has undergone as result of his disease, even though his mental capability still surpasses the average man unblessed with higher mental gifts.

Only a close observer, who knew the patient before, notices that he has sustained injury, especially in his ethic feeling; that he is indifferent with reference to many life relations which he formerly held in high regard; duller in his emotion, more lax in his moral principles, more easily influenced, and less energetic in his activity. If there be also less accuracy of memory, slowing of activity, less pleasure in work, and change of character in the sense of being more irritable, then the psychic weakness is still clearer and not unimportant from a medical standpoint, in that such weakened individuals have suffered damage in their moral motives, are easily influenced in their acts, and can offer less resistance to their emotional impulses.

With reference to the pronounced final stages of secondary dementia, two clear clinical pictures may be differentiated:—

(a) Agitated Dementia (General Mental Confusion).

In this condition there are still certain psychic elements remaining; there are still ideas and impulses, but they form part of a disintegrated mental mechanism, the single elements of which have

become autonomous and can no longer be united into a single consciousness—into an ego. The ideas of such a patient are absolutely vague, planless, accidental, arising out of superficial similarity of sounds or absolutely devoid of ideational association. Even the logical sense of words has become foreign to the patient. He speaks words that are without significance to him, and that represent nothing more than mere shells of words: the remains of former concepts and ideas of movement.

In his agitation and his confused volubility the patient resembles a maniac, but this resemblance is very superficial. Instead of lively emotion like that of the maniac, there is merely a demented play of features expressed in empty laughs or whining grimaces, and childish, silly conduct. While in the maniac, even at the height of his incoherence, there are connected groups of ideas, logical connections and associations, the incoherence of agitated dementia is without foundation and usually devoid of all association.

While in the remissions of mania the former complete mental force shines forth, in dementia, behind all the noise and disturbance with which the defective mechanism acts, there is nothing but the darkness of dementia.

In this condition, in spite of all the activity, combination of the disparate and defective ideas, a judgment, or a purposeful act is no longer possible.

Finally, mania is a temporary remittent condition, while agitated dementia is a terminal permanent state.

Such terminal manifestations of general confusion are principally the final stage of hallucinatory insanity; also of manias, with mania-like transitional stages, that have not gone on to recovery.

(b) Apathetic Dementia.

The most extreme degree of psychic deterioration is the condition of apathetic dementia, which results directly from severe unrecovered melancholias, especially of the active and stuporous varieties, from attacks of severe mania, and from acute dementia. In such cases the physiognomy has the expression of complete nullity. The innervation of the extensors is quite paralyzed, so that the body obeys only the law of gravity, and thus the attitude is determined. The chin sinks on the breast, the limbs take on a slightly flexed position, and the saliva runs from the mouth.

Mentally there is complete quiet, apperception is reduced to mere perception, and sensibility and reflex excitability are reduced to

a minimum. Owing to the loss of all the mental powers, such unfortunate patients are like animals that have been deprived of the cerebrum, and the fact is that their cortex is devoid of function. They no longer feel hunger, and take no account of danger; they must be fed, dressed, and cared for or they would die. In the most profound degrees of this condition, with the loss of concepts, there is also loss of ideas of movement, and under such circumstances speech ceases and there is true amnesic aphasia. This mental death may sometimes continue for years before physical death comes as a deliverance. In general, such unfortunates do not live very long, for either the paralysis of the psychic centers progresses to the centers of respiration and circulation or the absence of movement and sufficient respiration induces decided disturbance of circulation and nutrition, and the fatal termination is brought about by pneumonia, colliquative diarrhea, etc.

CASE 20.—Furious mania; termination in apathetic dementia.

K., aged 28, shoemaker, illegitimate, said to be without hereditary taint. From youth up he was timid, unsociable, and easily frightened, but he was mentally well endowed. At about the age of 19 (puberty) he had an attack of melancholia. He recovered completely in six months.

At the end of June, 1873, he came to his parent's house one evening disturbed and excited. He was sleepless and hasty in his movements. His excitement increased, and he had flight of ideas, was incoherent, and said he was the King of Germany, and the tight-rope dancer was the queen whom he wished to marry. He was Adam, St. John, and the Saviour of the World. The Schiller bell was the most beautiful. He began to sing, whistle, swear, scold, and slammed doors and windows, beat his relatives, saw fire in the air, the devil heard him call, and he thought he was to be burned, to be decapitated. He ate nothing, had very great thirst, and suffered with constipation. The patient was admitted in a state of fully developed furious mania July 7, 1873.

His thought had become a flight of ideas with incoherence. At times there were delusions of being the Saviour and John the Baptist. Consciousness was profoundly disturbed. The motor impulsiveness continued and was directed only to destructiveness. The patient had numerous visual and auditory hallucinations (devil, God, etc.). Patient was without fever, and the pulse rarely increased above 80. Vegetative organs were intact. Aside from a considerable prominence of the occiput there were no cranial anomalies.

The motor excitement, the incoherence of ideas, and the hallucinations, in spite of prolonged baths, continued several weeks at the same degree of intensity. Then profound, but short, remissions occurred, followed by more violent exacerbations.

After lasting five months, during which the patient was much reduced in general condition, the mania gave place gradually to quiet and profound exhaustion. The patient remained, however, confused and unclean, but now and then there was silly, childish emotion, and he would remain for hours at a

time in strange positions. He showed no longer any reaction to external stimuli, not even to the strongest faradic currents. His face took on an expression of complete nullity. The eyes stared into space, the attitude became relaxed, and saliva flowed from the mouth. There was no longer any reaction in speech, and there was great increase of fat. At the end of 1874 the patient, in a state of complete apathetic dementia, was transferred to an institution for incurables.

PART SECOND.

Psychic Degenerations.

CHAPTER I.

General Clinical Consideration.

THE etiologic and anthropologic separation of these psychopathic states has been referred to in the introduction (classification), and their peculiar course and clinical manifestations were emphasized in contrast with those of the psychoneuroses. Before considering or attempting to describe these states of degeneration, which vary so much individually, it seems best to give a general description of the various manifestations of an abnormal central nervous system whose functions are so frequently perverted. These, for the most part, are comprehended in the term neuropathic constitution, with irritable weakness, which already in the discussion of etiology has been met as an important predisposing cause of insanity. The signs of this neuropathic constitution vary extremely with the individuals. It can only be said in general that in such abnormally organized persons the central nervous system shows small resistive power, abnormal impressionability, and is prone to exhaustion, and that the cerebral functions, including those of mind, manifest themselves partly with abnormal force, partly in a distorted or perverse manner.

On the etiologic side it is to be noted that, for the most part, such persons come from parents who were insane, nervous, of abnormal character, or given to drink; or they were affected in early life by constitutional diseases, such as rickets, which had an injurious effect upon the development of the brain and cranium (hydrocephalic conditions). Often, too, grave spontaneous affections of the brain, such as meningeal hyperemia and encephalitic diseases or abnormal conditions due to traumatism, may produce similar results. Finally, onanistic irritation, which injures the brain in its organic and functional evolution during the period of its development, may have a similar effect. When the injury has been severe and the development is not arrested with the production of idiocy, the further develop-

ment is abnormal, and often takes a perverse direction. This taint then makes itself apparent partly in the general cerebral domain in signs of functional degeneration, and partly in the special psychic domain in anomalies of development of character, in morals and instinctive life, while the intellectual activities alone attain a state of good development. The expression "psychic degeneration" has no anatomic significance in the sense of a degeneration of the cortex as the organ of the psychic functions, but simply indicates that functionally there is a permanent, abnormal and often perverse and progressive deviation from the normal average of cerebral and psychic activity, because it is founded in the constitution—there is a deviation, a degeneration, of the general personality. The expression is also justified by the fact that we speak of a man morally degenerate. This psychic degeneration, however, has a more profound pathologic foundation, because often it can be referred to distinct cerebro-pathologic conditions, and often enough is associated with anatomic signs of degeneration. Besides, this psychic degeneration, from the anthropologic standpoint, is a very important manifestation; for in the individual it is only a single link in the chain of physical and psychic processes of degeneration which affect the whole family and pass through generations, becoming more and more pronounced in its forms as time goes on.

The anomaly, which is largely a perversion of functions of the central organ, is especially expressed in:—

(a) The domain of the vital processes, as great morbidity, lessened longevity, unusual reaction to atmospheric and telluric and alimentary injurious influences; greater height and remarkable irregularity of the temperature curve in febrile diseases with otherwise typic course and temperature; in great nervous excitability going even to the extent of severe neurotic symptoms (convulsions, neuroses, psychoses) during the physiologic phases of life (dentition, puberty, menses, climacteric); in the early occurrence of puberty, especially early mental and physical development, associated with weakness, physical delicacy, clear complexion, lymphatic constitution, and tendency to scrofulous diseases in childhood and later to tuberculosis. Frequently in such cases, arising at the time of puberty, there are conditions of profound constitutional anemia and chlorosis but slightly amenable to treatment.

(b) In the domain of the general cerebral functions there is unusually intense concomitant affection of the central nervous system in cases of slight physical diseases, in the form of somnolence, stupor, delirium, hallucinations, etc.

(c) In the sensory domain there is abnormal tendency to excitement, with unusual duration of excitement and irradiation to distant neural territories.

(d) In the domain of the sensorium there is tendency to hyperesthesia, usually manifested in intensity of impressions, of pleasure or aversion, leading, through ease in perversion of these, to idiosyncrasies.

(e) The instability of the vasomotor innervation shows itself in its intense manifestations simultaneously with psychic excitement (paleness, blushing, palpitation, precordial sensations) and other influences which reduce the tone of the vasomotor nerves (heat, alcohol). As a rule, such individuals react with an abnormal and unusual intensity to alcohol. At the same time the functional weakness of the nerve-centers frequently induces an inclination to indulge in this stimulant. Under its deleterious influence, on the basis of the organic taint, the most severe forms of functional degeneration develop.

(f) The functional signs of degeneration in the motor domain are nystagmus, strabismus, stuttering, contractures, and other anomalies of muscular innervation, especially in the face (grimaces, tics), and the most marked indications of taint—epileptic and epileptoid attacks.

(g) The sexual instinct in particular is very frequently abnormal. It may be either entirely wanting or abnormally intense in its manifestation, impulsively seeking satisfaction; or it may appear abnormally early, even in early childhood, and lead to masturbation or perversity: *i.e.*, to satisfaction in ways contrary to nature (*comp.* page 83).

(h) The taint often betrays itself, finally, in neuropathic conditions (neurasthenia, hypochondria, hysteria, epilepsy), which, for the most part, arise at the time of puberty, and progress, presenting more and more extreme pictures of functional degeneration.

The psychic sphere also presents analogous manifestations as the expression of an organic taint, of a psychopathic constitution.

In the emotional life the remarkable sensitiveness and irritability, and the ease with which psychic pain and affects occur, which may reach a pathologic degree and pass on into complete confusion, are remarkable.

In many individuals of this kind there is at times such emotionality that every thought leads to emotional activity; the merest trifle throws them into extreme emotional excitement. Slight indispositions, the menses, and other physiologic events may have this

effect. Indeed, even mere change of weather may cause disturbance of feeling, either directly or by means of a neuralgia. Along with this remarkable impressionability and emotionality there is not infrequently remarkable dullness of sensibility. Indeed, there may be change between these extremes without any motive, which shows itself in peculiar sympathies and antipathies. In a large number of such neuropsychopathic persons the emotional life is constantly alternating between exaltation and depression, so that they are never indifferent or normal: *i.e.*, free from emotion.

During the phases of exaltation there is constant tendency to activity, with peculiar and even dangerous desires, instincts, and impulses. In the depressive periods the patient suffers with painful indecision, inability to act, and imperative ideas, especially concerning suicide and fear of becoming insane. A peculiar anomaly of feeling, which is characteristic of an entire group of states of psychic degeneration, is the complete absence, or at least the inexcitability, of ethic feeling.

In the intellectual domain excitability is striking, and also the unusual power of imagination, which may attain the degree of hallucination; likewise the rapidity of ideational association and the inductive manner of thought are remarkable; but in spite of this advantage, which favors artistic and scientific activity, the irritable weakness prevents the attainment of results. Success in science is prevented by rapid exhaustion and the consequent incapability of continued intense thought; artistic effort is hindered by the defect of intellectual and esthetic endowment. As a result of this, the artistic activities of such individuals take on curious, even monstrous, or at least ugly, features. At the same time there is frequently a remarkable defect in the accuracy of reproduction of ideas. The process of association in such persons is remarkable. It seems to be disconnected. There are sudden immediate transitions in conversation. Clear logical thought is foreign to them. Frequently association takes place through the similarity of sound and words, and the relations are so widely separated, so unusually strange, that the results in thought are actually astounding; but they bring on fatigue quickly. Not infrequently in such cases there are imperative ideas, and even desultory anticipated primordial delusions, which later, with the oncoming of paranoia, reappear. In the sphere of the will there is also great mental excitability, with slight duration of excitement. This results in enthusiasm, which quickly passes off; impulse to activity, which never brings anything to an end; and, as a result of this weakness and inconsequence of the will, the individual subject to

this anomaly seems defective in character. In many of these individuals, especially such as are hereditarily afflicted with abnormal constitution, there are also impulsive acts. Indeed, oftentimes these unfortunates at regularly recurring intervals find themselves impelled to repeat the same perverse, eccentric, or even immoral act, without being conscious of any impelling motives. Sometimes it is possible to discover the cause of such acts—emotional states, idiosyncrasies, or imperative ideas. Any attempt at synthetic description of such an abnormal personality meets with great difficulties on account of the variations encountered in individuals.

On the whole, it may be assumed that in such persons the unconscious sphere of mental life plays a more important rôle than in normal individuals. Morel very properly called such individuals, in so far as they were the product of heredity, instinctive individuals. Their imperative ideas, impulsive acts, and peculiar associations of ideas justify this conception.

In the domain of the higher psychic activities the lack of harmony is striking. There may be low intelligence, associated with a one-sided remarkable development, even in idiots, and to the degree of partial genius; weakness of will and of character, which shows itself in defect of morality; incapability of an ordered life; and resistless abandonment to immoral inclinations, with, at the same time, perversity and one-sidedness of certain kinds of thought and feeling which causes such persons to appear strange, intense, passionate, and to take the rôle of eccentrics, misanthropes, and political and religious enthusiasts. Finally, capricious inclinations and antipathies; one-sidedness of certain endowments; inclinations associated with dullness and lack of interest for the most important social questions and duties; and restless, inconstant, instinctive, capricious life and acts, form the most frequent and striking features of the abnormal personality. Frequently enough this characteristic is shown in peculiarities of conduct, of dress, etc. The peculiarity of the personality is also frequently shown in a peculiar neuropathic expression of the eyes, as well as by so-called anatomic signs of degeneration (*comp.* page 129). All these things give a tangible proof that, in their earliest periods of development, injurious influences were at work, and they are the clear expression of a deviation from a biologic type—a degeneration. Innumerable tainted individuals remain all their lives upon the borderline between pronounced disease and relative health, at least for the individual. Occasionally, as a result of psychic or somatic influences, they lose temporarily their relative psychic equilibrium and present abnormal emotional states, patho-

logic affects, transitory insanity, etc. If they are subjected to continued or frequently repeated strains, they become victims of severe mental disturbance, which, if it begin in early years, often leads to quick termination in dementia. In any event, the tendency of such tainted individuals to become insane is very great. Mere changes in the manner of life, of the place of residence, misfortunes, political and social movements, are frequently sufficient to induce such a result. Even the physiologic phases of life are sufficient to induce insanity. One of the most dangerous periods is that of puberty. Frequently the pre-existing psychic anomalies, the eccentricities and paradoxic ideas, impulses, motives, and judgment form the connecting link between psychopathic predisposition and a psychosis, in that the one-sidedness or weakness of the intellectual development, the distortion of feelings and impulses, constant inclinations, passions, and abnormalities of character, form the favorable foundation for a slight exciting cause to finally induce actual insanity; or these peculiarities themselves, in the progressive development of the abnormal predisposition, may lead to the same result. Or, again, insanity develops out of a constitutional neuropathic state (hysteria, hypochondria, neurasthenia).

In general, in these cases the prognosis is unfavorable.

The pathologic anatomy of these degenerations is, for the most part, uninvestigated. The substratum of psychic degeneration is morphologically unknown, and this notion is only to be retained in a functional sense.

However, the significant and frequent disturbance or deviations in the development of the cranium are worthy of note. Stahl calls attention to the interference with the development of the brain due to disturbance in the growth of the cranium (microcephaly), or to the disturbed development dependent upon infantile hydrocephalus (macrocephaly). Meynert lays stress upon the want of relation between the brain and the cranium, on the one hand, and, on the other, the development of the heart and the vascular system. Arndt finds that the cerebral convolutions are less numerous and not so deeply marked, and that there are frequent distortions of parts of the brain, especially of the occipital lobes, and a consequent shortness of the posterior horn of the lateral ventricle.

Other findings of Arndt are also remarkable: in originally neuropathic individuals many cortical cells, even in the adult brain, remain at an embryonic stage, and the development of the medullary sheath of the axis-cylinders remains incomplete, with, besides, incompleteness of development of the lymphatics and vessels, associated with constitutional anemia. The acquired degeneration may be, in part, referred to disturbances in the nutrition of the vascular walls and to disturbances of vasomotor innervation, such as occur in severe diseases, chlorosis, alcoholism, sexual excesses, senility, etc.

CHAPTER II.

Constitutional Affective Insanity (Folie Raisonnante).

It occurs in two forms: a maniacal and a melancholic. While the first takes almost exclusively the form of recurring attacks, and is described under the heading of periodic mania, the latter, since it runs a continued course, is here to be described as melancholic *folie raisonnante.* The reasoning character of the disease-picture was mentioned as a symptom, but not as a form of disease, in the section on "General Pathology." The degenerate character of this symptom was noted in a clinico-symptomatologic description of states of psychic degeneration, and the fact was emphasized that certain patients present a wonderful mixture of lucidity and disease, know well how to excuse perverse acts, are perverted in action and feeling, but formally think correctly and logically. Delusions and errors of the senses are wanting, or occur only episodically from some peculiar transitory cause, as in emotional excitement. They remain elementary symptoms. Along with the reasoning must be emphasized the stationary, non-progressive character of the disease-picture, in spite of its existing years or all the patient's life. It has for this reason a profound constitutional significance.

Melancholic Folie Raisonnante.

This disease occurs most frequently in females. Hereditary taint is probably the predisposing cause. As a rule, for years the symptoms of a constitutional neurosis, like neurasthenia or hysteria, precede the psychosis and accompany it in its further course. Affections of the uterus, especially infarcts and abnormalities of position, are shown to be important exciting causes in the development of the psychosis. Where there is hereditary taint the malady may develop without any accidental cause. Under such circumstances it occurs before puberty or at that time, and then remains constitutional.

By physicians that are not specialists the fundamental neurosis alone is usually diagnosticated, and the psychic element of the disease-picture is not recognized. In social life the condition, as a rule, is judged merely from an ethic standpoint, and the patient looked upon as of disagreeable character or moody. Falret has described the disease in its principal features as "moral hypochondria with consciousness of the condition."

Clinically there is habitually disagreeable moodiness, a constant state of depression which shows itself in irritability, dissatisfaction,

a tendency to quarrel and speak evil, and inclination to maltreat others. The mind of such patients—who frequently enough are taken for cross, quarrelsome women; jealous wives; heartless, cruel mothers—is constantly under the constraint of painful feeling. They have a constant painful reproduction, and their psychic dysesthesia and anesthesia give them only unpleasant impressions from the external world. They see only the dark side of life, with everything black and threatening, and only unpleasant impressions are experienced; even the slightest unpleasant circumstance renders their condition decidedly worse. They are abulic, without feeling, without pleasure, incapable of continued work and intellectual application, unhappy, and in despair, even to *tædium vitæ*. They suffer constantly with the oppression of their abnormal feelings and physical troubles, and are given to a continued reproduction of them. In such cases imperative ideas are frequent. As proof of the abnormal nature of the character, which apparently is simply disagreeable, there are: the course with its exacerbations and remissions; the intensification of the symptoms at the time of menstruation; the complaint of the patients, during periods of comparative freedom, that they act in opposition to their better conscience and will, in that they are forced to be mean and try to injure others. There are also occasional attacks of anxiety observed during affects; delusions of persecution; and finally the accompanying neuropathic symptom-complex (neurasthenia, spinal irritation, hysteria), with the paroxysms of disagreeable moods and irritability. Not infrequently such patients are constantly afraid of becoming insane. By way of therapy, besides the treatment of the neurotic symptoms and the very frequent uterine disorders, hydrotherapy is to be recommended (lukewarm baths, rubbings with wet sheets), and also morphine hypodermically, which, of course, has only a palliative effect; but at the time of exacerbations it reduces the moral and physical suffering of such patients to a minimum.

The danger of creating the morphine habit is to be very carefully considered.

CASE 21.—Melancholic *folie raisonnante*. Interesting description of the condition by the patient.

J. D., aged 40, comes of a very tainted family. Father's sister had nervous attacks; father was a trembler and became disagreeable and choleric. Father's brother and father's father were insane. Four of her brothers and sisters are nervous, and occasionally are mentally disturbed. The patient's life was poisoned at its very beginning. As a child she was emotional, often sad and depressed without cause. With the occurrence of the menses in her sixteenth year there was hysteria, which developed into hystero-epilepsy

(clonic co-ordinated convulsions, with unconsciousness). At the age of 22 these attacks disappeared. The patient remained neuropathic (vague neuralgias, feelings of chilliness, globus); gradually this neurosis developed into the psychosis, which continues unchanged at the present time, only varying in remissions and exacerbations.

The fundamental features of this malady are a profound psychic depression, a constant psychic pain, and a painful state of emotional inhibition.

Parallel with this psychic hyperesthesia and dysesthesia there are vague neuralgic complaints in the spinal paths, nervousness, and a condition of nervous unrest. The psychic dysesthesia expresses itself in that the whole external world appears to her troubled, painful, and repulsive. Even friendly benevolent activity is painful to her. Often against her own will she is forced to be hostile and disagreeable to those around her, even toward her very best friends. At the same time, there is pronounced psychic anesthesia. She is without pleasure. Life has no allurement for her, but is a burden from which death would be a welcome deliverance. The intellect is only formally disturbed. The patient has no delusion, and she is at the same time fully conscious of her disease. The knowledge that she must be so opposed to everything that other persons love and prize increases her pain. Her thought is quite dependent upon her abnormal feelings. She is constantly tormented by sad, painful thoughts. In the domain of the will the patient is without interest and her life is one of dull resignation and retirement. At times the disease-picture changes. She becomes restless, irritated, reacts in a hostile way toward the external world, and asks deliverance and death. The restlessness expresses itself in all kinds of impulsive, purposeless acts. The hostile destructive acts are a pure psychic reflex action, analogous to convulsions due to spinal reflexes which a neuralgia might cause. They take place beneath the threshold of consciousness, and the patient is unable to control them. They are induced partly by the multitude of painful feelings of psychic dysesthesia and anesthesia, comparable to exacerbations of a neuralgia; partly by precordial distress and imperative burdensome ideas, in which the painful feeling renders itself, for the moment, objective. Such paroxysms occur in attacks. With this psychic hyperesthesia expressing itself reflexly, there are analogous spinal hyperesthesia, vague neuralgic pains, troublesome gnawings and sensations in the extremities. Sleep is restless and disturbed by frightful dreams. Habitual constipation and constitutional anemia complete the disease-picture. The only treatment that has done good is injections of morphine. These have only a palliative effect, but under their influence there is a state of relative well-being for which the patient cannot express her gratitude. Better than any clinical analysis of this state of melancholia without delusion is the following letter from the patient, which includes the essentials:—

"Pardon me for my great willingness to respond to your desire, for I am quite unable to explain myself by word of mouth. My thoughts come in battalions; they are my tyrants, and I am constantly forced to think. Reasonable thoughts are constantly overcome by evil thoughts. The evil thoughts are so powerful, so numerous, varied, and inconstant, that they change every quarter of an hour of the day for months and years, and these cause an equal number of projects which I am forced in fear to carry out on the instant. For example, I will and must die, be drowned, or suffocated by charcoal-gas. This and similar thoughts oppress me without cessation, though when the frightful

moment is passed, I am able with great effort to overcome the impulse. Twice I have been conquered, but fortunately or unfortunately I was saved. I was once frightfully forced by a thoughtless person to drink the water of a dying patient suffering from nervous fever, because I thought that death would be certain; but it was in vain. At the time of the menses I have sat in cold spring-water, etc., but without the desired result. I have frightful fear that I shall live very long, and for this reason I wish that you could give me some fatal drug.

"Were my life to become more bearable, were I to die, I should be thankful to you forever; for my variations of suffering are such that I can never express them. The sun, pleasant companions, and distractions are torment to me. Storm, tempest, earthquake, darkness, fires would be my greatest pleasure if they were not always temporary. I was never happier than during the bombardment (Strassburg). I cared for the sick and wounded with perfect content and devotion; but this was also in vain. Of late I have the most terrible thoughts. It is true that I can speak reasonably, but I cannot think reasonably; and externally, for the most part, no one would notice it. I feel almost always driven to commit some act, I know not what. I am never quiet, but I never know why. For the most part, I cannot sleep at night, and have anxious, despairing dreams, and I strike about me while sleeping. I am very much inclined to strike and much inclined to anger and impatience. Frequently I am inclined to insult persons, even those much respected by me, and treat them with disdain; and often I am impelled to sudden jumping, when I cannot restrain myself. After that I am tired and frightfully depressed and cannot move. Too, during the day, I am overcome with depressive sleep, forced to sleep, but cannot sleep long, and afterward the torture is still worse; but I know not why. Then, in the intervals I often feel physical distress, different symptoms of excitation in my limbs, which, however, are never like the other forms of inner distress. Now, however, I have much hope that the injections of morphine which do me good will diminish the duration of the frightful periods. I beg for them only in time of greatest need, and I shall never misuse their benefit."

CHAPTER III.

Paranoia.

THIS term[1] is applied to a chronic mental disease occurring exclusively in tainted individuals, frequently developing out of the constitutional neuroses, the principal symptoms of which are delusions.

In contrast with those of melancholia and mania, the delusions in this disease, devoid of all emotional foundation, are primary creations of the abnormal brain, and, in contrast with the delusions of primary hallucinatory insanity, are, from the beginning, systematized,

[1] Synonyms: primäre Verrücktheit (Griesinger); délire partiel; délire systematisé; folie systematisée (Morel); monomanie intellectuelle (Esquirol); paranoia universalis (Arndt); chronischer Wahnsinn (Schüle).

methodic, and combined by the process of judgment, constituting a formal delusional structure. This capability of combining and reasoning activity, in contrast with the psychic processes in primary hallucinatory insanity, is possible owing to the relative freedom from damage of the intellect, at least on its formal side (judgment); so that on superficial observation one is struck by the clearness and logic of such patients (monomania).

Notwithstanding the apparent lucidity of consciousness, this is, however, disturbed in a peculiar way, in that in spite of the absence of emotion, in spite of the clearness of apperception, the patient cannot correct his imagination, hallucinations, etc., and rather—devoid of the power of criticism—accepts them as facts. Thus his judgments are necessarily based upon false premises, and the creation of delusional conceptions is the necessary result, the foundation and keystone of which, notwithstanding the correctness of the logical creation, are fictions.

The feelings and acts of the patient are reactive manifestations to delusions and hallucinations.

Thus the important point of the disease does not lie, like in melancholia and mania, in primary emotional and psychomotor disturbances, but in the disturbances of the ideational sphere (delusions and absence of critical power). The paranoiac feels and acts exactly as if his delusion were true. The development and course of paranoia are always chronic. The development is slow, through months or years of a stage of incubation, until its height is reached. It then remains years and decades stationary, but never, as in the case of incurable psychoneuroses, ends in dementia. Recovery I have never seen in the observation of more than a thousand cases, though, however, I have seen lucid intervals, especially in the beginning of the disease, of ephemeral duration; and also profound and continued remissions with complete latency of the symptoms (delusions and hallucinations).

Complete intermissions, with insight and correction of delusions lasting even many months, are not infrequent. Such intermissions may occur even after years, but they must not be confounded with recovery; for in all these cases, after a longer or shorter time, the paranoia reappears, not as a relapse in which the whole disease cycle is reproduced, but as a continuation from the point where it left off. Furthermore, the frequent and sometimes very skillful dissimulation of these patients is not to be confounded with an intermission. Under some circumstances they are able to control themselves and appear to be well, and it is only in emotional excitement

that they betray themselves and reveal further elements of their painful or heroic history.

Study of the manner of origin of the principal symptoms of this disease, which consists essentially in mental disturbance in the form of delusions, is of the greatest importance for an understanding of it. In the beginning the elements of delusions develop out of imagination and defective judgment, aided by the remarkable original defect of logic; and, further, out of illusions of memory, and occasionally even out of actual errors of memory.

At this period primordial abnormal creations in thought may appear episodically. Upon the patient they have the same effect as imperative ideas: trouble him, make him apprehensive, depress him. But they do not long resist the relatively intact reason and judgment of the patient. In the further course to the height of the disease, actual illusions of the senses, which favor the development of delusions, are added.

The beginning of the height of the disease is indicated by hallucinations, which the fully developed paranoiac consciousness (disappearance of critical power, etc.), for the most part, uses without hindrance for the development of delusions. At the height of the disease the delusions develop essentially in the way described. Their most important source, however, lies in direct genesis, as an expression of spontaneous abnormal functioning of the cerebral cortex, upon which thought depends (primordial delusions), as well as in hallucinations. There are a few cases in which at the height of the malady the development of delusions is essentially primordially ideational ("paranoia combinatoria"); but cases are more frequent in which, during the origin and course of the disease, the sensorial hallucinatory domain is almost exclusively implicated ("paranoia hallucinatoria").

Indirectly, by means of reflection and conscious elaboration, every element may undergo infinite extension and application in the sense of secondary delusions. With the complete unfolding of the effect of the paranoiac consciousness there is the material which paramnesias (the confounding of delirious or dream-pictures with actual facts), illusions of memory, and actual errors of memory afford. Innumerable elements are finally offered by the pre-existing constitutional neuroses: the numerous disturbances of sensibility, motility, etc., which the paranoiac consciousness no longer refers to physical disease, but to influences from the external world.

At the height of disease this transformation of anomalies of the senses into delusional ideas takes place easily and imperatively; and,

on the other hand, the hyperesthesia of the centers and conducting paths makes possible the immediate transformation of ideas into sensations.

Thus the patient lives in a world of error and deception; and, unfortunately, his logical powers, acting correctly, create an entire system of delusions.

The degenerate significance of the disease-picture, which Morel clearly recognized, has been of late repeatedly called in question (Mendel and others), and paranoia has been regarded as a chronic form of acute hallucinatory insanity.

I have never seen paranoia in untainted persons. The taint, in the vast majority of cases, has been hereditary (abnormal character, psychoses, constitutional neuroses, drunkenness in ancestry); less frequently acquired as result of infantile diseases of the brain, or of rickets or disturbances of development of the cranium and brain. Tanzi and Riva found, in their cases of paranoia, heredity in 77 per cent., and in 9.5 per cent. disturbances of development due to infantile cerebral disease. In the remaining 14 per cent. hereditary elements could not be demonstrated, nor could they be excluded.

For the scientific solution of the question the clinical proof of taint in the individual case is much more important. In this sense, careful examination of the pre-existing morbid conditions and the present personality will never give a negative result.

Such an examination will always show that the whole development of the character of these candidates for paranoia is abnormal, and it cannot be denied that frequently the special direction of the anomaly of character determines the special form of the later developed paranoia; so that the latter represents, as it were, an hypertrophy of abnormal character. Thus, for example, an originally suspicious, retiring, solitary individual one day becomes persecuted; a rough, irritable, egotistic person, defective in his notions of justice, becomes a querulous paranoiac; a religious eccentric becomes the victim of religious paranoia.

The development of the disease out of the central nucleus of the personality—the character—throws important light upon a fact which later makes its appearance in the disease; namely, upon the predominant rôle that the unconscious mental life plays in such cases, as compared with that of the conscious life. Indeed, the character is essentially the expression of the power of unconscious mental activity. Its predominance is shown in the dreamy, romantic, enthusiastic life of such individuals, and in the fact that accidental delusions occurring in sickness, dream-pictures, and reminiscences

from reading or from plays, are elaborated in the depth of the soul, and early burst forth in the form of imperative ideas and desultory primordial delusions, which become latent, but later find their ultimate evaluation in the delusional ideas of the disease. As a rule, the imaginative activity of these individuals is very lively and easily excited. The intellectual endowment may be fair, but it is often one-sided.

The unresisted predominance over the ego by the creations of the disease (delusions, hallucinations), in spite of the absence of emotional disturbance; the unrestrained abandonment to them without sense or control, with their astoundingly rapid development into a system of delusions; and still more the illogical, perverted ideational association—all these point to an abnormally organized brain. This is shown with especial clearness by the constant inclination of these patients to bring into relation with their own personality the events in the external world.[1]

Quite unsought, devoid of all reflection, with an original perversity of logic, even though it be correct, these relations arise, and in consciousness they have immediately the significance of unassailable facts. Even senseless accidental words[2] make deep impressions and are understood in the strangest way—incomprehensible to a normal brain—and are brought into relation with the personality in a perverted and symbolic manner.

The pathologico-anatomic findings in this form of insanity affecting the innermost nucleus of the personality, and having its root in the character itself, are still very equivocal. Frequently there are asymmetries in the development of the carotid and vertebral arteries, of the cranium, of the hemispheres of the cerebrum,—and these findings are certainly not without relation to the character; but, as an explanation of the real disease-process, the

[1] One of my patients read the advertisement of a midwife in a newspaper, and immediately brought it into relation with herself, thinking that she was thought to be pregnant. Another inserted a love advertisement in a journal. The next day when she read at the corner of the street an advertisement of the well-known play called "Sie ist Wahnsinnig" ("She is Crazy"), she thought it referred to her. A patient, from the croaking of the frogs in the water, thought that he heard indications that he should leave the place where he was living and which was unpleasant to him. Another, a female patient, took the announcement of the play called "The Newly Married" as an insulting allusion to a love-affair of twenty years before.

[2] One of my patients went to Calvarienberg (a church of pilgrimage in Gratz). Immediately he interpreted the word in the following manner: *Cal* = Calle (bride); *vari* = war (was); *i* = Ignaz (the name of his youngest brother); *en* is the sign for Russia, and leads to great complications in the patient's thoughts.

autopsies are, for the most part, of negative significance. The absence of gross anatomic changes may also explain the fact that the disease does not progress to dementia, or at least leaves the formal mechanism of judgment unimpaired.

The exciting causes of the outbreak of the disease are those usual in insanity in general; but puberty, the climacteric, uterine disease, and onanism seem especially important.

The development of the disease is ordinarily gradual, growing, so to speak, out of the abnormal personality, thus, as a rule, escaping observation.

The stage of incubation is that of presumptions and suppositions, in contrast with the developed disease, in which delusions and hallucinations become certainty. In this initial stage, to the correct perceptions of the external world are added impressions dependent upon the character of the patient and arising out of his unconscious mental life, which are immediately associated with his perceptions. Something behind the phenomena is noticed and sought which does not belong to them (Hagen). Since the patient is not conscious of the source of these ideas, the peculiar relation of his perceptions seems to him to be a fact; and, since all that arises in his perception has its origin in himself, all is brought into relation with himself. Actually this distortion is no illusion, but temporarily it may become such. Any emotional astonishment or enthusiasm is not primary, but secondary. At times logic may correct these dreams, but always the intellectual error reasserts itself. The intensity of imagination and attention favors this. Accidental occurrences intensify the suspicion. In such cases erroneous conceptions of the external world resulting from reflection and illusion, such as occur in melancholic and maniacal patients due to abnormal emotional conditions, do not exist; but there is an unconscious, organic foundation for that which seems to come only from the external world. Thus, the latter, like the thoughts of the patient, appears to be of a peculiar nature. The unconscious mental activity further develops these thoughts, and causes mere suppositions to ripen into primordial delusions.

The transition to the stage of full development, characterized by the formation of delusions, is rarely sudden, with stormy manifestations (anxiety, convulsive attacks, hallucinations occurring and developing into true hallucinatory delirium), but usually gradual; in that the unconscious presumptions develop into illusory perceptions, until finally an astounding, though accidental, event changes in an instant the supposition to certainty; and with the accompanying emotion the delusion enters consciousness. With this, judgment and

reason are lost. Everything, accordingly, has either a hostile or a favorable relation to the subject.

An uncolored perception is now scarcely possible. Now, there is temporarily delirium of general transformation. Everything is changed, imitated, etc. (delirium metabolicum—Mendel).

The manner of origin of the delusions that now predominate is partly found in direct excitation of ideational centers and partly in organic peripheral excitation, which, without entering clearly into consciousness, still excites consciousness, or the psychosensorial centers, and thus induces corresponding delirious ideas (sexual, hypochondriac) or hallucinations. In the mechanism of his unconscious mental life the patient is not conscious of these processes, and arrives at the result by a detour through hallucinations and primordial delusions.

At first these creations have an astounding effect; but the patient assimilates them quickly. They have the same remarkably overpowering effect upon him as they would have were they unquestionably true. The motive appears late or not at all. The patient defends that which he believes to be a fact. Not infrequently the first primordial delusions take their origin in the formal activity of the dreamy conditions of waking dreams and delirium; just as earlier dream-pictures and delirium may undergo reproduction and thus become mentally actual. This origin explains in part the strange allegoric and romantic content of the delusions. (*Vide* "Original Paranoia" and "Hysteric Paranoia.")

The most important source for the origin and further development of delusions lies, however, in the hallucinations, which are rarely wanting at the height of the disease. The ideational source of these, likewise, lies in the subconscious mental sphere, and the hallucinations are, as far as consciousness is concerned, quite as foreign, astounding, and incomprehensible as are, in the beginning, the primordial delusions. In later periods of the disease conscious thought may also be transformed into voices.

In harmony with Samt, I find hallucinations of hearing most frequent and important, and, thereafter, in order, errors of sensibility, vision, taste, and smell.

In spite of all individual peculiarities, especial interest lies in the content of the primordial delusions, which is essentially the same in all patients.

The delusions in content are concerned either with ideas of injury or of furthering of the vital relations of the patient (delusions of persecution and grandeur). Much more frequent than grand delusions are those of persecution. Both may occur, one after the

other, or together, in the same disease-picture; or one may exist alone. Where the delusion begins as an idea of persecution, not infrequently in the later course of the disease, ideas of grandeur become so powerful and numerous that they quite overcome the delusion of persecution. The persecuted person becomes a distinguished personality (transformation), and then both series of delusions are brought necessarily into relation; and, even though those secondarily developed are predominant, yet those that were primary, in the further course of the disease, still make their appearance now and then.

As indications of future transformation there are early abrupt primordial delusions of grandeur, with corresponding hallucinations, which disappear quickly for the time being.

When paranoia commences with predominating delusions of grandeur and runs its course, no transformation occurs, though there may be episodically and occasionally primordial delusions of persecution. As reactive secondary manifestations, there are violent emotional states, which, in accordance with the content of the delusions, take the form of fear, outbursts of despair, or emotional feelings of inspiration which may reach the degree of ecstasy. The first may be accompanied by precordial sensations. Sometimes there are spontaneous outbreaks of fear, organically caused, which may take the form of raptus-like outbursts.

The malady, the course of which is in general chronic, often develops with apparent rapidity, owing to sudden increase of intensity (Westphal).

The exacerbations frequently occur in association with distinct somatic symptoms (states of cerebral excitement, congestion with sleeplessness, salivation, etc.), or with psychic symptoms (dreamy preoccupation, which may reach the degree of ecstasy; stuporous dullness; hallucinatory confusion with innumerable delusions; maniacal states of excitement with impulsive acts; imperative ideas and actions; verbigeration, etc.). In these states of predominating activity of the unconscious psychic sphere new series of delusions are formed.

A point of great importance in the estimate of the clinical case and its course, which up to the present time has been little appreciated, is the occurrence of other psychoses in the course of paranoia. Repeatedly have I seen dementia paralytica develop. Alcoholic and epileptic insanity are not very infrequent, and also periodic forms of mental disturbance, episodic melancholia, and hallucinatory insanity.

It is also worthy of remark that one clinical form of paranoia may have an abortive course, in that another form takes its place.

Thus, for example, original paranoia is abortive, and *late paranoia* occurs. It also happens sometimes that typic persecutory late paranoia becomes transformed, under the influence of alcoholic excesses, to alcoholic paranoia; or that querulous paranoia is overcome by a simple persecutory paranoia; or that simple persecutory paranoia is replaced by erotic or religious paranoia. In contrast with cases in which there occurs a simple transformation of the delusions, it is to be remarked that the original form becomes latent, as if by an intermission, and the new form seems independent; in so far as it appears to arise primarily, with a distinct stage of incubation, and develops thus to the height of the disease.

The final terminations of paranoia are states of mental weakness, which, however, are more characterized by emotional dullness than by intellectual defects; and in any event the former artistic and mechanical capabilities of the patients, as well as their power of judgment, are left unaffected. These persecuted heroes, gods, and kings of asylums often remain to the very end of their lives the valued workers of the institution, which has become their second home; and this happens the more readily because the delusional ideas gradually fade, hallucinations become less frequent, and both lose their influence upon the emotions.

At any rate, the nature and process of paranoia do not lead to dementia. When paranoiacs dement there is certainly some complication. Dementia is here the result and the expression of precocious senility, alcoholic excesses, or onanism; or the termination of complicating psychoses.

A detailed description of the disease-pictures which paranoia presents requires, in the first place, a division of the material. Such a classification, in the present state of our knowledge of the nature of these conditions, must remain purely empiric and depend upon the time of the occurrence, the peculiarities of etiology and the course, and the symptomatic details. It is to be noted that certain cases begin in the period of childhood (original); others occur only at the time of full mental development (late). In accordance with etiologic circumstances, which give features to the disease-picture among the late forms, we may distinguish simple paranoia, or typic paranoia, in contrast with forms of neurasthenic, hysteric, hypochondriac, alcoholic paranoia, etc. In addition, the typic content of the delusions (*comp.* page 77) is not without clinical significance in classification. It is, in any event, not accidental, and in classification it must be taken in consideration, since there are forms of depressive and expansive delusions.

I. Original Paranoia.

By the term "original paranoia," in contrast with the following group of late paranoia, I understand cases that began before—or, at the latest, during—the period of puberty.

These patients are always profoundly and without exception hereditarily tainted, and from their earliest youth have shown abnormal mental reaction; in whom, according to Sander's excellent expression, in the course of mental development the disease progresses as the healthy mind unfolds in the normally constituted individual. This form is much more infrequent than the late form. In 550 cases of paranoia I have observed it 16 times (10 females, 6 males). The taint shows itself somatically in the early occurrence of genuine constitutional neuroses (neurasthenia, hysteria, hypochondria); in abnormally early or perverse manifestation of the sexual instinct, rarely with absence of onanism; in a tendency to delusions arising out of somatic disturbances—febrile diseases or exacerbations of the neurosis.

The psychic taint reveals itself in the character; in a relaxed, languishing, sentimental tendency, inclining to hypochondria and eroticism; in sensitiveness, emotionality, and readiness to feel hurt (morally).

The symptoms of the stage of incubation may sometimes be traced back even to the fourth year of life. Such children think that they are not treated by their parents with the same love that is shown their brothers and sisters; that they are Cinderellas. This feeling of being neglected is so painful to them as to destroy all pleasure in life. They seek and find substitutes outside of their homes. The atmosphere at home is not noble enough for them, and they feel drawn toward higher classes of society. Actually, these delicate, pale, dreamy, and sentimental individuals, precocious in mental and physical development, find consideration among kind neighbors and others. Friendly words, harmless flattery, especially coming from those of higher station, make deep impressions. Feelings develop of being destined for something higher. In dreams and delirium come ideas of belonging to the higher class of society. These are carried over into waking life and become the starting-points of air-castles and high-flown ambitions.

At this point of development primordial delusions of a distinguished origin may occur, but they usually disappear quickly. The supposed unkind treatment at home, the actual or assumed kindness of other people, afford nourishment to such dreams.

The idea of being the child of other people becomes more and more powerful. The patients notice lack of resemblance with their family, and accidental resemblance to portraits of reigning princes or distinguished persons.

When such persons are spoken of, the false parents become pale and embarrassed. Concealed in this there is a secret which the patients feel forced to explain. Now hysteric, delirious, exceptional states; even dreams and paralogic explanation of events of waking life; expressions of others; advertisements in the newspapers, and passages in novels, all become the keystone of the future delusion.

The patient sees with constantly growing clearness that he is only an adopted child of the people that say they are his actual parents.

Respectful salutations on the part of others increase. From time to time the adopted father or adopted mother let drop indications of higher origin, of great fortune, of the letters-patent of nobility; but, as a rule, the parents are on their death-bed and die at the moment when the secret was to have been revealed. Gradually the patient learns this by means of illusions and hallucinations of hearing. Reminiscences from dreams and delusions of corresponding content, which are taken for reality (illusions of memory), are important aids in the elaboration of the romance and the delusion. The fancy develops out of the dark mysterious future quite typic romances of having been kidnaped in early youth from the parental princely castle by robbers, gypsies, etc. Now the patient sees clearly the significance of the former suspicious neglect, which, as a child, was so painfully felt in contrast with the treatment of his brothers and sisters. The fixation of the delusion takes place often with extreme slowness. Such patients seek many years after the princely family, and belong first to this and then to that distinguished race.

In females, in its course, there is regularly an erotic element; a manifestation of erotic paranoia; a romantic love for some distinguished person. As a result of this there are love-scenes, weddings, and childbirths in dreams and hallucinatory delirium, especially upon an hysteric basis. Too, in the waking state errors of the senses, mistaking of persons, and paralogic significance given to what is read play an important rôle in this love-romance.

Episodically delusions of persecution are observed, sometimes entirely primordial creations, but usually due to conflicts and obstacles which the paranoiac delusion meets in the external world. The further course, a formal romance of persecution and grandeur, is essentially like that of late paranoia, especially in its hysteric and

onanistic clinical form. The intermissions, which may last even years, are remarkable. Important in the diagnosis of this form of paranoia, aside from its manner of origin and its beginning before puberty, are the romantic character of the delusions with predominating ideas of grandeur, and the typic recurrence of the delusion of coming from a family of high station and of being only the adopted child of the parents. Worthy of remark are the extreme variability of the content of the delusions, along with the constant delusional nucleus; the powerful influence of constitutional neuroses (especially hysteria), with the great psychic valuation of the symptoms of the neurosis; and, finally, the early occurrence of confusion (due to innumerable errors of the senses, illusions, hallucinations, etc.), in which the patient may present the picture of primary hallucinatory insanity.

CASE 22.—Original paranoia.

Victoria K., aged 26, single, waitress, was admitted to the psychiatric clinic October 22, 1879. Her mother was psychopathic, and two of the mother's brothers were insane. The patient when received was fantastically arrayed with black and yellow ribbons, pictures, and cheap jewelry. It was said that for a year she had acted like the queen and empress, occasionally threatening to imprison and disembowel those around her. She entered the clinic with high and condescending mien, where she expected to be crowned. Even as a little child she had never been happy in her parents' house. She had always seemed to be a stranger, like a step-child. She had to endure many hardships and much work. She had been treated severely and without love, ridiculed and persecuted. She had wept days at a time and thought of her sad fate. Relatives reported that from her childhood she had never been like other children—quiet, dreamy, easily injured, sensitive, exalted, romantic.

The patient remembers a frightful vision she had at the age of seven. At the age of nine she developed her ideas of high origin. She felt that she was highly endowed and extremely distinguished as compared with companions of her own age. Often in playing the thought came to her of whether she was not really an empress.

In her twelfth year, as a result of the unkind treatment of her parents, she noticed that there must be some secret in her future. She felt that her brothers and sisters envied her. The conduct of people seemed more and more strange to her. By her parents and some other persons of her acquaintance she was repulsed; but others were friendly and even respectful. One day her teacher said to her, "Victoria, you are a relative of the Queen of England (by name)." This made a profound impression upon her. Later she often heard called after her: "Victoria of England, thou beautiful bride." Occasionally she also heard insulting words.

She began now to think and occupy herself with all kinds of romantic ideas.

At the age of fifteen the menses occurred with chlorotic and nervous symptoms. At the age of sixteen she had a "blood disease" (morbus maculosus?). At that time she felt that her blood was becoming blue, and ex-

plained thus the blue spots on her skin. Now she noticed that the people met her as if she were a queen. Occasionally she saw a picture of the Queen of England, and remarked the resemblance, so that she thought she must be a daughter of this queen. The people often called her "Victoria of Schwabenland." As a result of the conversation of her relatives, as well as from slight indications of the pastor on the occasion of a procession, she thought that she was the daughter of the Queen of England and that she had been taken from her mother to her adopted parents when she was three months old. These perverted ideas, arising from occasional conversation, she could not get out of her head, and she found in them indications of her future, and elaborated them further in her dreams.

At the age of 21 she had a love-affair with a teacher. After intercourse with him she had a divine dream in which she saw herself the mother of Christ. Even at that time, in 1874, she often had the thought that her lover was the crown prince. This supposition became certainty when one day the teacher put a ring on her finger and then looked at her and at the picture of their majesties which was hanging in the room. At that moment she discovered his resemblance to the emperor. The people also let her see that they thought she was the bride of the crown prince, and that they knew that she was a princess of England.

After 1876 the disease made rapid progress, in that the impressions from the outer world became more and more erroneous, and the patient developed into a romantic, fantastic personality, and began to act in accordance with her delusions.

Single words caught in conversation, notices in the papers, things read on pieces of paper, dreams, etc., became the foundation-stones of her delusional creations. Accidental passages in novels, which she cited even after years, as "Thou, queen of all queens, thou art like a picture of the Virgin, thou beautiful Angela," etc., she referred to her princely origin. A novel in the paper called *Heimgarten* made an especially profound impression on her. She read in it her entire life-history. The part "The Past" was dark and sad. When she wished to read the part "The Future," the pages of which were folded, the book disappeared by chance. Thus her future remained unrevealed. She noticed this much in her reading—that she was already a queen and that she would become an empress.

On the occasion of a dream in 1877 it became clear to her that she was no "Katzian." She saw her adopted father in prison upon a pallet, and on the right of him a dog, the symbol of truth; at the left a cat, that of deception,—Katzian,—and thus she was the false Katzian. When she went to church on Christmas, 1878, and remarked the son of the house, Joseph, the thought came to her that she might be the Virgin Mary; and later when she went into the cellar, and, thinking of her lover, looked at a light, she thought that it was the fire of love. When she afterward went to bed she experienced heavenly happiness. Her mouth was full of sweetness and her hands were like sweet-smelling flowers. In ten minutes all was over.

Soon after her admission to the asylum, the patient became the Empress Concordia, which name she had learned in Schiller's "Glocke." The articles with which she ornaments herself are explained in the most perverted way. A red band around her throat signifies love; a white, innocence; a yellow and black, her imperial origin. The picture of a child in a copper frame with a

crown-like ornament signifies partly the divine child and partly the imperial crown. "The crown should be a ball and a cross. The ball signifies that I possess lands; the cross, that I have been forced to bear much torment and suffering in life."

The delusions are soon projected into her new surroundings. The chief attendant is the Queen of England; the professor, the emperor; one of the physicians, the crown prince. The chief attendant had taken her position out of pure maternal love. Another attendant becomes her former lover. The other patients are princes in disguise who struggle to obtain her hand. The patient demands that here finally an end be made to this scandal by giving consent in order that it might be known who was husband and wife. She thought that it must be terribly distressing to the men to be always going about in women's clothes. All day long the patient is bedecked, awaiting her final coronation. Many imperial messengers come to her. She is very gracious, condescending, also often erotic, irritated, and excited, because she is always seeking after her high family, and cannot understand whether she belongs to the English or Austrian royal house. She asks for the journal called *Heimgarten*, that she may read her entire future in it; uncertainty is frightful.

She cannot understand the news that the crown prince is to marry a Belgian princess. Everything is understood in a crazy way. The princess comes to Salzburg (= salt—*i.e.*, bitter; burg—*i.e.*, asylum—bitter sojourn); then to Schonbrunn (= branch of the asylum before which there is a beautiful spring); the engagement ceremony takes place in the Church of the Augustines (= the chapel which is near the institution, and which the patient entered for the last time in August).

The patient is tall, stately, without anatomic signs of degeneration, and with neuropathic eyes and languid expression. Menses profuse, dysmenorrhea, uterus virginal and decidedly anteverted. The whole impression made by the patient is that of exquisite paranoia. In the course of the last two years the delusions have undergone no further elaboration. They are less frequent and expressed with less emotional accompaniment.

II. Late (Acquired) Paranoia.

The outbreak of this form of paranoia always takes place after the period of puberty, not infrequently first in the fifth decennium, and in females especially in connection with the changes of the climacteric. But in any other earlier period of life the outbreak may come, and it is distinctive of the severity of the taint to note how insignificant the exciting causes may be. The nucleus of the delusions of these patients lies in ideas of persecution and grandeur.

In many cases the disease-picture is made up exclusively, or almost exclusively, of one or the other form of these primordial delusions. More frequently, however, it happens that, seemingly in accordance with a law, one form of delusion develops out of the other, overcoming that which first appeared; and under such circumstances the persecutory ideas are always those that first manifest

themselves. In this case the disease-picture is made up of ideas of persecutory content (persecutory insanity), yet episodically manifestations of complimentary, but abortive, ideas of grandeur are not excluded.

Two forms may be differentiated:—

(A) Forms with primary and predominating delusions of injury to the personality (persecutory insanity): *persecutory paranoia.*

(B) Cases presenting primary and predominating delusions of benefit to the interests of the personality (delusions of grandeur): *expansive paranoia.*

(A) Persecutory Paranoia.

This is the most frequent form. As empirically distinct clinical pictures there are the following:—

1. The Typic Form of Acquired Paranoia.

The subjects of this malady are, for the most part, from childhood on, peculiar, quiet, retiring, uncommunicative, easily injured, irritable, suspicious, and not infrequently inclined to hypochondria. The disease-picture begins with delusions of persecution.

The nucleus of the delusions of this great and practically important group of patients lies in the delusion of injury to the health, life, honor, or fortune of the individual by enemies. The stage of incubation is usually long, and, for the most part, escapes observation.

Where this period is observed, on the somatic side there are the clinical symptoms of exciting causes (gastric catarrh, uterine disease, climacteric, neurasthenia due to onanistic excesses), or symptoms of an hypochondriac or hysteric neurosis, usually of a constitutional nature. On the psychic side there is elaboration of the fancies above referred to, which may become illusions. The persons about the patient seem strange and even suspicious. The external world seems in general to be changed, especially in reference to the personality of the patient. It seems to him as if the world did not wish him well; that there was something against him in the air. He feels himself the object of annoying attention, and becomes himself attentive (delusion of suspicious attention). He assumes that in his neglect of dress and in his secret vices, which his face reveals to others; and in former faults and crimes which have presumably become known, lie the cause of the change in those about him. Accidental, harmless remarks by others; frequently meeting the same person; accidental departure of those that were present when he enters a room; the passers-by that avoid him or stop; clearing the throat

or coughing,—strengthen his suspicion. Now and then he recognizes that he deceives himself, but owing to his originally illogical mind and his mental uncertainty and indecision, new reasons for suspicion increase. The preacher refers to him in his sermon. In the newspapers and advertisements on the walls he discovers references to misdeeds, crimes, intimate relations, etc. Public opinion blames him. He is taken for a fool, a bad fellow, an imbecile. People point him out, ridicule him, insult him, look at him askance. In the harmless conversation of others he takes up words and brings them into relation with himself, and later he hears, under similar circumstances, shameful remarks. The street boys whistle street tunes which refer to him; and, in fact, the want of critical power may be so intensified that the patient hears shameful things in the twittering of the birds. An effort is made to injure him in the eyes of those above him, and compromising papers and objects are sought in his effects, in order to blacken his character, to make him the scapegoat of others, etc.

The patient is made anxious by these suspicious ideas, and he becomes more shy, retiring, and irritable than before. He retreats more and more from society, brooding and thinking over the dark ideas of hostility and repression. Occasionally he also reproaches people with their hostile conduct.

The transition to the height of the disease may be sudden, with a violent attack of apprehension which calls up into consciousness a host of long-prepared hallucinations and delusions. More frequently, however, it is gradual, with the imaginary ideas taking on more and more the character of illusions, the reasons for suspicion becoming more frequent, until finally an accidental event changes the previous latent delusion to certainty, and hallucinations occur. Some slight disturbance of physical health—a febrile disease, a gastric catarrh, an intensification of uterine or climacteric troubles, increased onanistic excesses, a few sleepless nights—frequently is sufficient to bring about the development of the disease to its acme. The patient suddenly reaches the frightful certainty that he is poisoned. He hears voices that threaten his life. The delusion has an overpowering effect. The patient now has the terrible certainty of what he had suspected. With surprising rapidity the delusions become systematized, in which process hallucinations of hearing play their part. In accordance with political ideas or social position, the patient is the victim of a band of Jesuits, Free Masons, Socialists, Spiritualists, or the like; or he is persecuted by the secret police, neighbors, or this or that companion, associate, etc. He is terribly

frightened and robbed of reason. The delusions of persecution are rapidly generalized; imaginary ideas, illusions, hallucinations, and delusional ideas pervert external events.

Here, under such circumstances, errors of the senses afford the greatest aid. It is only rarely that they are wanting or limited to the form of illusions. Voices play the most important part. They seem to come from near or far; and when the disease is well along also even from parts of the body. Later, conscious thoughts are changed into hallucinations (the enemies guess the patient's thoughts, spy on them, etc.). The patients differentiate the various voices and give them particular significance.[1] The voices, as articulate reactive events in the unconscious sphere, reveal the secret plans of the persecutors and tell their names; often quite senseless connections of sounds enable the names to be discovered.

Of next importance are the errors of general sensibility and cutaneous sensibility. All possible physiologic and pathologic sensations are interpreted in the sense of persecution. There are insects and snakes on the skin and animals in the stomach. The persecutors destroy health with poisonous odors, powders, and secret machines. They steal organs, and commit sexual vices, coitus, etc. Less frequently gustatory and auditory errors occur. Without exception they are of hostile and unpleasant content. Food tastes of arsenic, chloroform, feces, etc.; drink, like urine. Everything smells of decay and burned feathers. These simultaneous sensations strengthen the patient in the conviction that an attempt to destroy his health and life is being made.

Hallucinations of sight are the least frequent. They occur but episodically, may be of quite indifferent content, and are not assimilated by the delusion. Only in very rare cases is there a shadow-like perception of the persecutor.

As a reaction to the abnormal hostile events taking place in consciousness, the patients develop emotional states. These may be very lively; but, aside from occasional attacks of apprehension as spontaneous manifestations, these are secondary and natural, and, as it were, the physiologic reaction to the primary change of the ego and its relation to the outer world brought about by the delusional ideas.

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[1] One of my patients differentiates talk by telegraph: *i.e.*, voices that come from a distance not clear and indistinctly heard, and "Ausstaffiren": *i.e.*, guessing of thought. Whatever she thinks, those around her know immediately. Her son, whom she bears now four years, speaks to her in telegraphic speech.

In this primary non-affective manner of origin of the ideas of the paranoiac, devoid of relation to intensified or diminished feeling of self, lies a decisive point of differentiation of this disease from melancholia or mania with delusions (the delusional insanity of some authors).

In these diseases the content of the delusions may be the same, but they have an entirely different motive. The paranoiac does not know how it happens that he is persecuted. He has not deserved it. Only gradually and in a logical way does he arrive at the conclusion that he is the victim of a conspiracy or the like. The melancholic knows only too well why he is persecuted and is approaching a shameful death. He has deserved death, for he is a wicked fellow. His delusions are the secondary product of affective conditions. They move about a diminished feeling of self, and therein have their root (micromania, delusions of sin).

With great justice Schüle says that the developed delusion in the paranoiac has a relieving influence, whereas the delusion created in the explanatory efforts of the melancholic has a depressing effect.

Too, the acts of a person suffering with delusions of persecution are essentially only the logical and natural reaction of a consciousness which presumes its existence to be threatened.

With reference to the conduct of the patients in relation to their delusions, two stages—one of passivity and the other of activity—are to be differentiated. At first the patients are passive and on the defensive toward the delusionally conceived external world. They avoid it, close the windows and doors, stop up the keyholes, and change their dwelling frequently. They cook their own food or live only on raw eggs, etc., treat themselves with antidotes, flee to foreign lands, or take other names in order to save themselves from their persecutors.

Then the condition grows more and more painful, becomes unbearable. They change from their passive state; but before they become dangerous they usually give premonitory signals of the approaching storm, which, however, only too frequently remain unnoticed.

They threaten their supposed persecutors, apply to the courts for protection, until, sadly convinced that their efforts are vain, they are forced to help themselves, and find themselves in a position where they are driven to defend themselves. At this stage the patient is extremely dangerous.

Hallucinations, emotional illusions, or a supposed suspicious look, a whisper, a suspicious gesture, indicate a threatening danger and lead to murderous acts, which have all the features of a supposed justifiable act of self-defense.

Patients of this group never commit secret murders; rather, they sacrifice their victim in broad daylight and before witnesses. They do not conceal their motive, and take delight in the success of their deed. Sometimes it happens that they attack some quiet, indifferent person, commit almost any crim-

inal act, in order to be brought before the court, which shamefully persecutes them and fails to answer their appeals. Sometimes they commit suicide in order to end their unbearable persecution.

The patient passes on directly into a state of terminal mental weakness; or *transformation* of the delusions takes place. The patients, persecuted and repressed up to this period, become princes, emperors, prophets, God, messiahs, rulers of the world, queens of heaven. This interesting transformation of the personality occurs in at least one-third of the cases, and, as far as my observation goes, exclusively in those of an hereditary nature.

The regularity of this process is unequivocal; its cause, however, is not immediately apparent.

Only in a certain number of cases can it be proved that this compensatory delusion of grandeur arises in a conscious psychologic way, in that the unfortunate patient seeks comfort in religion or air-castles. It must also be acknowledged that a patient who looks upon himself as the object of general attention easily develops the thought that there is in him some particular quality, and therefore there is in the delusional idea of being observed a psychologic element which may give rise to the future delusion of grandeur. But these psychologic explanations are not fully satisfactory.

There is much which goes to show that the transformation is not devoid of an organic foundation; that it arises out of the nervous mechanism, and takes place essentially unconsciously and intuitively.

The transformation may take place suddenly—under such circumstances not infrequently there are changes of sensation as a basis (feeling of magnetic currents, changed molecular conditions in the central organ?); or it arises out of conscious states in which the patient seems to die and suddenly to awake to a new and transformed life. In other cases the transformation takes place in a stuporous or ecstatic state, a state of somnolence, or in a state of hysteric delirium. More frequently the transformation is accomplished slowly through a period of incubation, like the period which precedes the development of the delusion of persecution.

The patient notices that people look at him with attention; a person of high station stops his carriage before him in the street; in the newspapers there are indications of a higher origin. Passers-by and people at home meet him with respect. He hears others talking about him, calling him a knight, saying that a great fortune awaits him.

Unconscious mental activity further elaborates the idea. In dream-pictures the delusion makes itself felt at first. There the patient is shown letters-patent of nobility, and reminiscences out of episodic delusions and fancies become elaborated.

Finally the delusion enters consciousness as an actual fact, directly or as a result of hallucinations, showing him to be the descendant of a reigning prince or the child of God.

Logical association with the previous delusions of persecution is found. Now the patient knows why his enemies were interested in trying to destroy him as a pretender, for he regards all the previous

persecution as a stage of preparation and trial necessary in one who was to become the messiah. In the dominating delusions of grandeur there are afterward also episodic delusions of persecution. Both series of primordial delusions disappear and recur one after another, and at times quite disappear. Finally under such circumstances there is a terminal state of mental weakness.

On the diagnostic side, in contrast with the secondary delusional state arising out of mania, there are, in paranoia, the striking mixture of delusions of grandeur and persecution, the retention of intelligence, the stability of the condition, and the romantic content of the delusional ideas.

In contrast with other forms of grand delusions, as they occur, for example, and of no less extravagance, in paretic dementia, here the fixed and systematic character of the delusional ideas is to be emphasized.

The treatment of this form of paranoia is symptomatic and not wholly without result. In case of conditions of sexual irritation and paralogic hallucinatory and delirious manifestations based on these, the bromides in large doses are useful.

Amelioration is obtained by the subcutaneous use of morphine, which lessens the paralgic sensations and the consequent delusional ideas; and it is also applicable in that form of paranoia, so frequent in the climacteric, which manifests itself especially in hallucinations.

In the later stages of the malady the hospital for the insane, with its means of mental treatment and distraction of work, is very important to keep the patient from giving up to his dreams; and at the same time it affords him an asylum, in removing him from the ridicule of others, and thus often still valuable mental capabilities may be usefully employed.

CASE 23.—Typic form of acquired paranoia. Outbreak during the climacteric.

Anna S., aged 47, single, was admitted April 23, 1882. Her father was a drinker. Several children of the family died of convulsions. The whole family was said to be inclined to hypochondria, to be exalted and irritable.

The patient was delicate as a child, well endowed mentally, and always emotional, apprehensive, inclined to be alone, and suspicious. At 10 years of age, severe disease, with cerebral symptoms. At 15, menses, with severe disturbances. Thereafter the menses were always accompanied with pain in the abdomen and back, and headache.

Since her fourteenth year the patient had been forced to depend upon herself and sacrifice herself for her brothers and sisters; for her mother died early. The patient is said to have been well until 1876, and to have gained her livelihood in large part until that time. In 1876 the climacteric began (irregu-

lar, profuse menses, unilateral headache, congestions, feelings of heat in the head, roaring in the ears, feelings of anxiety, rising in the chest, general fatigue). At that time she accepted a position as a nurse for an invalid who soon died. The death of this lady impressed her very much. The invalid had promised to the patient that if she would stay with her she would leave her her fortune. The patient immediately noticed that Mrs. E. and herself were surrounded by enemies. The people in the house were so peculiar, unfriendly, and a priest tried to come into direct relation with the invalid. The cook and a laborer in the house helped him in this. The cook wished to have everything for herself. Jellies sent from the dealer arrived opened and presumably had been poisoned. The taste of the beer and wine was bad, and the patient felt that she was made sick by them. When Mrs. E., *in extremis*, sent for the physician, the priest arrived with an accomplice and forced her to give everything to the church. The patient arrived suddenly and surprised this pleasant company.

After having made her will, Mrs. E. died suddenly—apparently an unnatural, frightful death. The patient thought that she got her share of the poison in beer. At any rate, she was quite miserable and half-paralyzed in her left leg. She returned, sick and excited, to her sister. In this condition she quarreled with her sister and expressed the suspicion that the latter was also in league with her enemies; and she sought a place in a foreign land as a nurse. The menses did not return. Up to 1878 she suffered with unilateral headache, congestions, burning in the head, feelings of heat, tension in the body, palpitation of the heart, pain in the back, suffocating odors, but nevertheless she did not notice any more persecution, without, however, correcting her delusion.

Again in 1879 she felt ill (alternating feelings of heat and cold; feelings of having the head and body swollen). Again she became anxious and suspicious. At night she heard taps on her window; she saw a man in the bushes without a hat, and was violently frightened. She became conscious of invisible enemies and an accomplice in the crime practiced on Mrs. E. by the priest, who was a Jesuit, and she was persecuted by the whole order of Jesuits. Her sister invited her to P., and she accepted this invitation on November 13, 1881.

When she arrived, her brother-in-law grew pale. The invitation was only a trap to attract her and to get rid of her afterward. Her brother-in-law becomes an accomplice of the Jesuits. Her sister and her children accidentally fall sick. She remarks that an effort is being made to get rid of them, as in the case of Mrs. E. The child smells of phosphorus. Her sister's breath is pestilential. The water-closet stinks horribly and is poisoned. Suffocating atmosphere fills the whole house. In her room there is a suspicious back door. At night dark forms pass by her window, come unseen through the closed door, and prepare instruments of torture. Dogs howl all night. The patient sleeps no more because of fear. March 20th she ran away to Gratz to the house of a relative. On the way the train whistles peculiarly. Opposite her in the compartment there was a man with fearful eyes who looked at her constantly —apparently a Jesuit. He spoke to the conductor, and thereafter the train went very slowly. Her head swam with fear.

When she arrived in Gratz, weeping she begged her relatives for protection for herself and her sister. She was brought back to P., and grew quieter.

In P. she had new suspicious experiences. She found an umbrella handle which was a hand holding a black ball. It had been lost by the Jesuit—the ball was a poisonous pill with which he wished to poison her. At night he moved around slyly seeking to get her in his power. In frightful fear she ran away again to Gratz March 22d. In the compartment again the Jesuit sat up before her, looking at her continually, holding a satchel in his hand, which was full of instruments of torture. At Gratz he got out at the cloister of the Brothers of Charity. Evidently he had designs against the prior of the convent; and the sisters, too, must await this slow and horrible death.

Patient goes willingly to the hospital, for here she feels herself to be in security.

She is of middle size, without signs of degeneration, anemic, and without disease of the vegetative organs. Examination of the uterus gives a negative result. The patient complains of vague pains, feelings of paralysis, of being swollen, headache, without objective symptoms. On the next day she noticed also in the hospital many suspicious things, became anxious and very suspicious. She thought that the Jesuits were hanging about the door, that the attendants were already won over by them, and feared traps at night.

Because of occasional disturbances of digestion, she notices that she is poisoned with arsenic and lead. After having eaten vegetables she felt numbness and trembling in her whole body. Her paralgic sensations are interpreted, in the sense of persecution, as being due to poison given by the Jesuits. They were opposed to the Imperial House, and had already killed the Emperor Joseph. Also unpleasant odors which she experienced occasionally were interpreted in relation to persecution. The most harmless occurrences, even the calling of the cuckoo and the croaking of the frogs in the park near by, had relation to her. Dr. L. showed her the muzzle of his dog. This meant that she must not speak any more or her mouth would be stopped. A fellow-patient beckons to her husband with her umbrella and handkerchief. She is making signs to the Jesuit. This lady asked once about the patient's home—she wished apparently to get information about the patient and give it to the Jesuits. When an attendant once scratched on the wall she thought that it meant that the grating should be unlocked in order to facilitate the entrance of the Jesuits. Accidental visitors in the ward she took to be sworn friends of the Jesuits and of her brother-in-law, for one of the visitors had a cane like that of her brother-in-law, and he held it back of him that she might not recognize it. In everything she is reminded and must recognize that the power of her enemies reaches to this place. Her letters have been seized by the Post in Vienna. They are given to a censor and then communicated, so that everybody knows her secrets.

At night stones are thrown against the window. She hears whispers and suspicious noises. The existence of hallucinations of hearing cannot absolutely be determined, but there are hallucinations of smell and illusions of hearing and sight. The delirium is, in large part, primordial, and has arisen in false judgments and the imaginary elaboration of actual events.

The patient lives in constant fear and excitement, and scarcely trusts herself to go to sleep. Morphine and bromide of potassium bring quiet, but are soon refused, for the patient becomes suspicious of the physician. June 12, 1882, the patient was sent to an insane asylum near her home as probably incurable.

Subsidiary Forms of Persecutory Paranoia.

The disease-picture of the typic form of paranoia contains clinical features worthy of note: *i.e.*, the delusions and errors of the senses have peculiar colorings and contents due to special etiologic factors. This is true of cases developed upon the basis of the constitutional neuroses, or as a result of the influence of organic diseases, in so far as the somatic processes give a particular content to the delusions arising in the unconscious psychic sphere; or because the causal sensations, etc., are incorrectly interpreted by the paranoiac consciousness.

These disease-pictures of neurotic paranoia are described under the neuroses. Besides, there are the following disease-pictures to be described:—

Sexual Paranoia, with its Clinical Pictures.

The foundation of these forms of paranoia is a functional or organic genital disease as the exciting cause of the mental disease. In men this is almost exclusively abuse of the sexual organs in masturbation; less frequently, forced sexual abstinence with excessive libido; and least frequently chronic gonorrheal inflammation of the posterior urethra — all of which injurious influences may induce sexual neurasthenia, and later general nervous weakness, which then act as the exciting causes. Neurasthenic paranoia (masturbatory) will be described later. The same causes are effectual in women; or there may be anomalies of position of the uterus or other genital diseases that irritate the nervous system, and become effectual through the induction of neurasthenia. The false interpretations of local genital and neurasthenic troubles are similar in both sexes *(vide infra)*. In women also there are pollutions (thought to be nocturnal sexual attacks), hallucinations of smell, delusions of physical persecution, etc. There are also cases of sexual paranoia in women (very frequently in the climacteric), in which the genital disease without the connecting link of spinal irritation gives rise directly to deliria and hallucinations of a sexual persecutory character. Such patients notice that men approach them, because they are taken for prostitutes. Such an opinion about them has been spread to injure them. From this arises the bad treatment by the family, friends, etc. Later the patients hear at night rappings on the window and immoral proposals. Even in sermons such obscene ideas are discovered. Still later, hallucinations of hearing develop (of being a harlot, syphilitic, a murderess of babes, of having induced abortion). Such false perceptions are further elaborated (by combination); for example, she

is to be forced into a house of prostitution. As reactions, there are profound depression, occasionally even suicide, delusions of pregnancy, and all kinds of attempts to save threatened sexual honor (tampons placed in the vagina, etc.). In all such cases transformation of the persecutory delirium to an erotomaniac expansive state may take place, and thus there are clinical transitions to hysteric paranoia.

CASE 24.—Paranoia sexualis.

S., aged 35, single, domestic, was admitted to the mental clinic at Gratz, September 4, 1880. She herself sought admission to have help against her persecutors. The patient comes of a drunken father. She has never been sick; menses at 15; was passionate; had had many lovers; had borne eight times, the last in 1873. Since then she had often had uterine troubles and irregular menses. She had given up sexual congress since 1877. Three years ago, while on a journey with her employers, she heard voices—always the same unfamiliar masculine voices. She seemed to hear them through a speaking tube. She was told she had murdered her children, was a prostitute, affected with a foul disease, a thief, that she deserved to be beaten and thrown in the water. Her whole life and all her love-affairs were criticised. Patient was astounded, and assumed that her former confessor had told her confessions. She then noticed how everybody despised her and spat in her presence. She left her place and tried another, but she was persecuted by the same voices and contempt everywhere.

This persecution made the patient sick and miserable. Female voices were added, always with the same persecutory sexual content. She was allowed no rest at night, and her greatest secrets were discovered. In 1878 she noticed that her persecutors knew her thoughts, and answers were made to what she might be thinking. All her thoughts, desires, and acts were criticised and ridiculed. It could not be endured. She was told that she was crazy, but she thought it was due to persecution, and not to disease. She was called harlot and murderess of children. Often she was tired and depressed by this. During the last few months she had been troubled by foul odors, which early in the beginning of the persecution had troubled her. To escape her unknown persecutors during the last few months the patient had wandered about in the country until she was devoid of all means, and she came to the hospital in Gratz for help and protection.

The patient has a rhombocephalic cranium, and is of exquisite neuropathic appearance. The foreign type of her personality derived from the proletariat; her fine features, white and delicate skin, and swimming, genuinely nervous eyes are remarkable.

The uterus is of the size of an apple, and almost immovable as a result of adhesions, which fix it on both sides. The cervix is hard, swollen, enlarged, and sensitive to pressure.

The patient presents no symptoms of neurasthenia or hysteria, though there are sensations in the area of distribution of the pudendo-sacral plexus.

She compares these sensations to worms which wriggle about in the pelvis. Some days the patient is free from voices and thinks she has escaped

her persecutors. Then the voices return, and with them the old distress. Potassium bromide and injections of morphine have a quieting effect and lessen the voices. With time, the voices seem to arise in the abdomen, where the patient has abnormal sensations. There is a sensation there as if the abdomen contained a cat. All possible obscenities and coarseness are cast upon her. Since the disease remained stationary for months, the patient was sent to an asylum for the chronic insane.

A remarkable variety of sexual persecutory paranoia is *delusions of jealousy* in paranoiac women.

With Kräpelin, I find this principally in the climacteric and having a combinational manner of origin. There is a short period of incubation with an irritable emotional state based upon the feeling of being neglected by the husband, and in part upon consciousness of the disappearance of physical charms, which, with increasing mistrust, leads up to the development of delusions.

The suspicion of marital infidelity on the part of the husband is confirmed by harmless acts (conversation of the husband with neighbors' wives, remaining out longer the same evening, indifferent statements about others, etc.). The suspicion becomes certainty when the injured wife catches her husband in nightly rendezvous with girls. His indifference goes so far that he brings women home with him at night; rappings on the windows, cracking in partitions and corridors of rooms are proofs; signs are made to the object of his love by coughing. Finally the patient hears women at night in the room. It is remarkable that she does not see the women, but she feels it in herself (awakening of lustful sensations as a result of ideas—feelings of pollution as soon as the husband is with these women). Her acquaintances pity the neglected wife, but are ashamed of her nevertheless. The joy of the house is destroyed. In accordance with her character, the patient becomes either resigned or furious. She fears for her life and anticipates the worst on the part of her husband. As a result of supposed necessity, not infrequently there is violence or attempts to poison the husband. Under some circumstances there are attempts as a result of revenge.

CASE 25.—Paranoia sexualis (delusions of jealousy).

W., official's wife, aged 43. Admitted December 21, 1880. She comes of an imbecile, psychopathic mother whose mother was insane. From childhood, the patient was neuropathic, suffered with migraine, and as a child had at times visual hallucinations. She was married at 23, had a child at the age of 25, and a miscarrige at the age of 26. Thereafter there was chronic nephritis. Since then she has been irritable, quarrelsome and jealous of her husband without any reason. In the beginning of 1880 the climacteric began (scanty, irregular menses, bad sleep, vertigo, and feeling of fullness in the head). The

patient became extremely irritable, suspicious of those around her, and accused her husband of relations with an old sick lady; she became extremely excited, raved about him and about various neighbors' wives whom she brought into relation with her delusions of jealousy. Auditory and visual hallucinations aided the delusion.

At night she heard whispering in her bedroom and heavy breathing and sighing, and was thus excited; had pollutions and became convinced that her husband was with other women. Gradually pollutions occurred in the daytime, from which the patient drew the same conclusions. Frequently there were also olfactory hallucinations of foul odors. Increasing excitement, public scandal, threatening of her husband and his supposed mistresses, in which the patient was furious, made it necessary to send her to the asylum. Of late, delusions of persecution had taken on a wide range. The patient thought not only that she was sexually deceived, but also that her life was threatened, that her husband was in a plot with his mistresses to kill her with poison. She noticed that she was looked on with shame and contempt.

In the asylum, at first the patient felt herself to be an injured and persecuted wife. She demanded her discharge, protection of her relatives, and imprisonment of her husband, and regarded her delusions of jealousy and persecution as perfectly justified. In the course of the year 1881 these delusions retreated into the background and in their place there was the picture of chronic nymphomania.

She became coquettish, erotic, and approached the physicians and accused them of taking away her senses with chloroform. She pursued the physicians occasionally with invitations, took them for princes, and furiously demanded embraces. The following year the patient presented a state of chronic nymphomania with constantly increasing signs of mental weakness. The genital findings were uterine infarct, and hypertrophic cervix with a fissure.

Delusions of jealousy in men belong, for the most part, to alcoholism. Outside of alcoholism, I have found it occasionally in tainted individuals that were always inclined to jealousy, mentally of limited endowment and of weak virility, though at the same time, in some cases, passionate and incapable of sexual satisfaction.

This last condition (relative psychic impotence), whether it be due to frigidity of the wife or absence of lustful feeling in the husband, plays an important part in the development of the delusion. At first this arises by way of combination: accidental, but frequent visits of gentlemen in the house are thought to be for the wife. When she clears her throat it is a sign given to her lover hidden near by. Every noise at night is interpreted in the same sense. There is increasing avoidance of the wife, and brutal treatment of her that may go to actual violence. Auditory and sometimes visual illusions help on the delusion. People in the street cast insulting glances or gestures, indicating the act of "putting on the horns." The children are alienated from the father by the wife; they do not resemble him—

therefore they are not his children. In the course of further development there are often delusions of general persecution—delusions of being robbed, in that the unfaithful wife gives money and property to her lovers; delusions of poisoning. Not infrequently there are grave acts of violence toward the wife and her supposed lovers.

CASE 26.—Paranoía sexualis (delusions of jealousy in a husband).

P., aged 47. Admitted, November 29, 1878. Subofficial, said to be untainted; a moral, industrious man of small mental endowment, who has always been passionate; father of several children, living in correct marital relations. In 1877 he received a severe injury of the head; he was attacked, thrown on the pavement, and struck with a loaded cane. Besides slight injuries there was a severe trauma with depression of the left temporal bone. He was unconscious for a long time, and confined to the bed several weeks.

In his convalescence he seemed changed mentally, irritable, and weakened. He became abnormally passionate, then suspicious, and expressed ideas that his wife was not true to him. When his wife cleared her throat or sighed, he became excited and violent, because he thought her lover was thinking of her.

Gentlemen visited the house only on account of his wife. Occasionally he stated that she had her lovers in the house, committed immoral acts with them, and planned to kill him. On account of these ideas, he was joked and laughed at by his acquaintances. He felt hurt at this, and his condition grew worse. He stated that his wife took fuel and food to her lovers. Every noise he heard at night indicated to him that some one was stealing to his wife. He heard doors slightly open and low voices, became more and more excited and brutal, and threatened to shoot his wife. In November, 1878, he seemed about to carry out his threat and was arrested.

In the asylum he held to his delusions. His wife was remarkably friendly with men who came to visit them. They came very frequently and with all sorts of excuses. He noticed the disappearance of fuel and of food. If he spoke to his wife about this, she was embarrassed and wept. On evenings she liked to find something to do outside the house. The patient is convinced that she has several lovers. On several occasions she came home with her toilet quite deranged. He did not wish to shoot her, but to threaten her in order to make her change her scandalous conduct.

The patient is without signs of degeneration, and without any consequences due to his head injury. Mentally weak. In the institution the delusions of jealousy retired into the background, without, however, being completely corrected. On December 28, 1878, he was discharged improved.

2. *Querulous Insanity with Mania for Lawsuits.*

This differs from the foregoing form in that, in the opinion of the patient, the interests endangered are legal rather than vital, and the starting-point of the delusion lies in actual, not imaginary, events; while the patient soon takes the active rôle of the persecutor, and not that of the persecuted. However, not infrequently in this

form of querulous insanity the delusions of the ordinary form of paranoia occur episodically, and sometimes it takes its origin in these. Essentially, however, it is a *paranoia combinatoria.*

Individuals affected with querulous insanity are tainted, usually hereditarily, with somatic signs of degeneration (anomalies of the cranium), and early and constantly affected with psychic anomalies and defects. The clearest and most important defect is ethic perversion, which, in spite of consciousness of the outward forms of justice, never permits a profound moral conception of right. For them this gains a formal value only as a legal weapon for the attainment of egotistic objects.

Out of ethic defect soon arises colossal egotism which misconceives the rights of others, which tends constantly to the assertion of personal rights, and reacts to an actual or supposed injury to personal interests in the most violent way.

The candidates for this disease early attract attention by their selfishness, irritability, their brutal demands for justice, their infinite overestimation of self; and by reason of these evil characteristics they are constantly in conflict with others. As a rule, the intellectual endowment is below the average; but, even when there are certain mental capabilities more or less noticeable, a distortion of logic is never missed, which, in spite of all apparent sharpness of judgment, shows important defects, which develop only too easily pettifogging legal tendencies. Frequently, too, there is defect in the power of reproduction, and facts reappear in consciousness in a distorted light.

Numerous persons of this kind remain at this degree of original anomaly of character and become a burden to their associates on account of their tendency to indulge in pettifogging legal processes. In many there is formal pleasure in lawsuits.

The accidental cause of the actual disease may be any lawsuit in which the individual has been defeated; or it may be the mere rejection of his assumed legal rights, which are, in reality, audacious assumptions. Not as result of a lively sense of justice, as was frequently supposed, but out of a *lack* of the sense of justice, dependent upon their intellectual perversion, such individuals fall into a passionate state of feeling as a result of the presumed injury to themselves. They quickly lose their reason, and have only one purpose in view—the restoration of their presumed injured rights. Occupation, family affairs, and the welfare of their home take a position subordinate to this duty.

After a time they recover from the chagrin which they at first suffer, brooding over their position and out of sorts with the world.

Putting faith in their abnormal overestimate of self and their own power, and without trust in lawyers owing to their abnormal suspicions, during this time of brooding they devote themselves to the acquirement of knowledge of the law and legal procedure. Armed with these weapons they at last besiege the courts, write accusations, and make appeals wherever possible.

There is still a certain remnant of clearness of thought, and the passionate excitement is controlled in a measure and speech kept within bounds. With the repetition of lack of success in their efforts, and the consequent disappointment, they become more and more bitter, have less insight, and lose what remains of clearness of thought. The state, which up to this time might be regarded as passion by the psychologic observer, becomes more and more clearly mental disease, devoid of insight, judgment, and reason. Instead of recognizing that their suit was unsuccessful because it was unjust, these patients, owing to their mistrust, seek the cause of their failure in partiality and venality of the judges; and in harmless events they find proofs for this conviction, which becomes more and more fixed. Now the last restraints disappear. Their constantly more voluminous recriminations, requests, and denunciations are filled with invectives and insults to officials, which attract the attention of the law, an event which only serves to intensify the passionate state of the patients.

They now look upon themselves as martyrs and dupes of law; all legal procedure was only a comedy of justice. With insane obstinacy, pettifogging logic, and shameless brutality, these individuals now oppose not only justice, but the law which has given judgment against them. They refuse to pay fines, indemnities, taxes. They attack the officers of the law and call the judges of the State thieves, scoundrels, and perjurers. They feel that they are in the state of war against suffering justice and its evil interpreters, as champions of right and morality, as martyrs of brutal force. Sometimes they become protectors and advocates of other oppressed persons, like the querulous individual examined by Buchner, who, with others of like mind, got up a union of the oppressed,—*i.e.*, for their protection,—of those who had been treated badly by the law, and gave notice of the existence of this society to the king. Usually, for a long time such patients are misunderstood by the laity and punished; for, in spite of the absence of insight into the foolishness and irrelevancy of their manner of action, they possess a remarkable amount of dialectic power and knowledge of law, and are excellent advocates of their affair, which unfortunately is of an insane kind. Hardly have they

been punished than they commit again the same misdemeanors, which are, for the most part, insults to officials, and therefore they seem to be confirmed criminals, deserving further aggravated punishment; but their illogical unyielding conduct is only the natural result of their disease.

Thus the necessary and beneficent appointment of a guardian and commitment to an asylum take place unfortunately only after they have used up their property, insulted the courts, disturbed public order, and destroyed public respect for the law. They may have communicated their delusions to their relatives, or even revenged themselves in blood on their enemies.

CASE 27.—Querulous insanity; later delusions of poisoning and persecution.

Mrs. S., aged 43, wife of a shoemaker, legally divorced. Her father was insane. Even as a child she was peculiar for her self-assertiveness and her unusually developed feeling of a sense of justice. Twenty-three years ago she was married without inclination, which after a short time led to divorce, it is said in part because at night she was troubled with incontinence, a habit which troubled her until her first child was born, and which was inherited by this daughter, the latter suffering with it until the time of puberty.

Mrs. S., later, besides showing great irritability and inclination to mix up in other peoples' affairs, presented nothing remarkable. In the beginning of the 70's her father and brother died. She was not satisfied with what she inherited, and raised the suspicion that her relatives and the court had deprived her of six thousand gulden. This prejudice is said to have left her no peace. She bought legal books and gave herself up to studying them. By devious ways she was able to get knowledge and copies of papers relating to succession and family documents. Her suppositions were not erroneous. She became certain that at the time of the inheritance money had been misappropriated, signatures had been forged, and when she had united all her proofs she addressed a complaint to the court. Unfortunately her efforts were unsuccessful. As she noticed later, at the first examination very little interest was shown, and they went to work with partiality, setting down incompletely the proofs, not adding the necessary paragraphs and making it difficult for her to bring proofs, so that she did not succeed. She noticed that the lower court was interested in the affair, made an appeal, the affair was sent back, and she then made a more violent application. Anew she gave herself to the study of the law, because she noticed that the lawyers were sly foxes and deceivers and were worth nothing; but since she found partiality and dishonesty everywhere she was unable to obtain justice, although she had employed all means.

Her language became more and more haughty and insolent. She felt on account of her great knowledge of the law and her sense of justice that she was called to cause the laws to be applied and to uncover the impostors. As a result of such an attempt she found herself for the first time on February 13, 1877, before a court on account of insult to officers of the law. In spite of her astonishing persuasive power and brilliant defense, she was

sentenced to punishment. In spite of this she continued to make demands and institute suits.

On August 13, 1877, she was called before the court to answer to renewed offense to public officers.

She appeared with a large bundle of papers, answered every question addressed to her partly with paragraphs taken from the code of legal procedure, the contents of which were as familiar to her as the Lord's Prayer, partly by extracts from her papers, even when they accidentally were in opposition to that which she wished to prove.

She maintained that the persons who had been insulted by her were quite deserving of it, and that she would not change one iota of it. Mrs. S., declaiming standing and using a chair as a speaker's desk, said: "I shall address myself to the Minister of Justice to communicate to him the intrigues that are carried on against me; and in case he does not give me justice, I shall appeal to the Supreme Court, which I hope will uncover the deception; or perhaps it is thought that I do not know the way to the Supreme Court. I demand my rights, nothing else, and I shall know how to obtain everything that has been kept from me in the most shameless manner." With a louder voice—"I shall not rest, and finally I shall apply to the Emperor." Medical examination during the course of the trial showed Mrs. S. to be suffering with querulous insanity. During her speech she became greatly excited and had only partial control of herself. Suppressed ironic exclamations escaped from her, such as: "And the court medical examiner says that? Another plot, nothing but this; *I* insane!"

When the opinion was finished, she said, in a most indignant manner, "It's ridiculous," and left the room, bowing.

Mrs. S. was declared not guilty on account of irresponsibility. She continued in her querulous conduct. A gross insult to her relatives in the open street led to her arrest and commitment to an asylum.

She entered the asylum with a loud protest against being robbed of her freedom, and expressed herself in the worst insults toward representatives of the law, lawyers, etc., and said that the physician, on account of his opinion, was a party to the plot against her. She maintains her imposing attitude, insists upon her rights, writes numerous memorials in which she mixes paragraphs from the criminal and legal codes and code of procedure, etc.; and admiring herself, she breaks forth with the words: "Oh, I am well up on these points; there is nothing to be reconsidered, even in the article in the newspaper about my defense. It was recognized that I was very well up on the code of criminal procedure. The proofs lighted up electrically in my mind; I wrote an appeal that was astonishing. In the trial it seemed as if the court was made up of accused, and I was the real court. They should tremble before me, these astute Tartufes. In the papers one can read that in the last conference of Ministers the Magistrates of G. were seriously handled; but wolves do not eat each other."

She takes pleasure in the anticipation of her future trial, and compares herself to a genuine full-blooded horse that storms and destroys all before him. She intends to attack the whole will of her father, since it was written with his own hand without a notary and made up without proper legal form. That was the reason why the children had been given but the smallest shares. Occupied with such feelings and thoughts, the patient went about with the

greatest hauteur. At the same time she intrigued and quarreled, made herself the advocate of her fellow-patients, criticised the rules of the house, which she found to be bad, and acted brutally and impertinently toward the officers and servants of the house. The extent of the patient's mental disturbance, in spite of all dialectic and sharpness of thought in reference to the law, is shown by her great irritability, which even in the asylum makes life with her almost impossible; and by the slight cause necessary to produce an uncontrolled explosion of anger. On such occasions delusions of persecution, latent or concealed at other times, were discovered. She thought an effort was being made to destroy her understanding; that poisonous medicines were given her.

Mrs. S. is of medium height and well preserved. The expression of the face is haughty and sly. The left side of the face is narrower than the right, and less actively innervated. There are no other skeletal anomalies. The vegetative functions present no disturbance.

During the last two years the picture of querulous insanity has become less and less marked, with greater prominence of delusions of persecution based upon imaginary threats against her health and life: a clear proof of the inner relationship of these symptoms. The patient in her memorials to the officers only occasionally uses her former legal expressions, but, on the contrary, suspects those about her of having intentions against her life. She saw those around her give significant glances of understanding; they could not bear her look, which made them blush and seem embarrassed. Accidentally she saw spots on the floor, or traces of poison poured about, and took some of the nurses for former servants of her hostile relatives, or for paid assassins. Gastric catarrh, with which the patient often suffered, was always a proof to her of poisoning. At such times food had the taste of chalk and metal. As a reaction there were outbursts of anger in which the patient in rage demanded justice, threw everything about, and was only restrained with great trouble. In these attacks she lost consciousness and afterward knew nothing of what had taken place (pathologic affect as a further sign of the profound cerebral disease). At the time of the menses the patient was sometimes much excited, irritable, and troubled with migraine and paralgic sensations. Transferred to a hospital for the chronic insane.

(B) Expansive Paranoia.

This form is decidedly less frequent than the depressive persecutory form. In accordance with the content and direction of the delusions, there may be differentiated: 1. Inventive, or reformatory, paranoia. 2. Religious paranoia. 3. Erotic paranoia.

1. Inventive Paranoia.

The subjects of this malady are always tainted, originally perverse, and for the most part of inferior mental endowment, or at most only endowed in a one-sided way. The delusion of distinguished personality is the nucleus of the whole disease, affecting persons of intensified feeling of self-importance, and in part directly developed out of this characteristic. The future delusion is latent in the character

and in the whole manner of thinking. This form of paranoia is essentially one of combination. The period of incubation is very long, characterized by dreamy fantastic existence, brooding over sensations and discoveries, dreams of air-castles or future might and greatness, feelings of being destined for something important, great over-estimate of self, with tendency to a haughty personal bearing toward the vulgar crowd. The false ideas are concerned with brilliant deeds, as poet, artist, discoverer, social reformer, founder of new religions, etc. In proportion to the mental endowment these ideas are silly, absurd, or they are original and at first sight surprising; and, in spite of all perversity and want of harmony in the mental capabilities, they give evidence of certain mental powers.

Thus it may happen that the public, devoid of good judgment, may take the individual for a genius, just as, on the other hand, geniuses are taken for fools. Certain pseudo-geniuses and actual geniuses have in common the originality of their ideas based upon the peculiarity of the associations and an inductive method of thinking.

But by their fruits true and false genius are recognized. The first is a milestone which marks the end of one epoch and the inauguration of a new one, showing light ahead for the world, and the full significance of his powers are recognized and appreciated only by those who come after. False genius is a caricature of actual genius, for it has its external appearances, but not its inner worth. In the false genius the mental force, calmness, and consciousness of an end, of the actual genius, are wanting, and likewise all the qualities that arise out of the superior and harmonious development of the mental powers. Though the active thought of the false genius be original and promising, yet he wants the power to use them logically and usefully. At most there is the capability to criticise and tear down what exists, but not the power to create.

There are innumerable false geniuses of this kind in society, forever dissatisfied with what is, and constantly driven to attempt to better the world. They constantly feel themselves unhappy as unrecognized geniuses. They are often on the very borderline of paranoia, and it needs only special circumstances—as, for example, times of excitement—to deprive them of the remainder of their reason. They come forth then as discoverers of new social and political systems for the saving of society, as the founders of ideal states, or the originators of new religious sects, etc. It is interesting to observe how, at such times, a fool makes not ten, but a thousand fools; how whole sections of the people are infected by the originality and eccentricities of such crazy demagogues, attracted by their fanatic zeal, founded sometimes on hallucinations, and their pretended divine inspiration.

It is remarkable how often twisted and more or less paranoiac individuals, as leaders of insurrections and revolutions or founders of sects, have brought unhappiness upon themselves and their converts. This was shown on the occasion of the Commune in Paris in 1871.

The ways and means through which in such individuals paranoia develops are, aside from the rare hallucinatory source, the same as in other forms: false combination aided by original perversity of logic, errors of memory, sudden occurrence of primordial delusions ("inspirations").

The obstacles which such unfortunates encounter among their rational fellow-beings, and their final commitment to an asylum, they regard as persecution, but without the development of actual persecutory delusions. In their delusions of grandeur and their original weak-minded perversion and want of logic they regard these manifestations of sound thinking simply as vexations created by their opponents; as manifestations of jealousy or rivalry, or of fear of their remarkable talents. In the asylum these patients continue to elaborate their paranoiac ideas of reform; they live only for themselves and for their dreams of the future, awaiting the moment when these shall be realized. In the course of years the personality is often transformed into an individuality quite demented, and evidences of confusion and mental debility become apparent.

CASE 28.—Reformatory paranoia.

Mrs. R., aged 48, wife of a laborer, a widow eight years, mother of two children. She comes of a family said to be untainted. Her mother's sister died insane.

At the age of 9 the patient had scarlatina, and at 13 typhoid. From puberty, at the age of 13, until 26 she was chlorotic. Married at the age of 26, her marriage was unhappy, and after the death of her husband she lived with the guardian of her children. As a child she had high-flown ideas. At the age of 12 she wished to go into a convent in order to give the Christian religion to the heathen. When at this time she left school, they wished to make her a teacher at once(!). When she was a young girl she dressed in the fashions one or two years ahead of others, since she could foresee these. Since 1872 she had occupied herself with projects for the improvement of education. She communicated her plans to her relatives and later to officials, but nowhere did she find recognition. Since 1882 she had noticed that the newspapers had taken up her ideas, without, however, recognizing her as the originator of them. The same thing happened with regard to innumerable inventions which no one would accept, and which likewise were proclaimed by others and brought to fruition.

The patient was given to drink (two to three liters of beer, rum, grog, etc.). In the winter of 1886-87 she had temporary alcoholic visions (black dog, dead relatives, angel, devil). In 1887 the climacteric occurred; a sexual per-

secutory hallucinatory paranoia developed, which, however, disappeared and was latent until Easter of 1888.

On account of this episodic mental trouble, the patient was in an asylum some months after January, 1888. This paranoia began with voices which told her that she must be careful in order that she might become better. She was insulted, called a soldier's whore, a beast, and she was reproached with not properly educating her children.

Later she heard her own conscious thoughts expressed. She smelled incense, ether, and therefore thought that some one wished to narcotize her. Food in the restaurants tasted strange, and voices spoke of poisoning. She felt peculiar pricking in her body, an electric rain fell on her, and she was made to cough and have palpitation of the heart. Often she had dreams of flying, of hovering, and of having coitus. In the fall of 1888 everything disappeared, but the patient never had any insight into this episode of her malady.

She now again occupied herself with projects for the happiness and bettering of the world. She felt an inner impulse to this, and new sublime thoughts came to her as inspiration.

In December, 1889, the patient was again placed in the asylum on account of a pathologic state of intoxication. Her expansive paranoia had remained unchanged. At this time the patient was entirely occupied with her social projects. She felt in herself impulse to speak to the people, and that she was a reformer and must mount on the barricades. She wished to restore the fundamental religion, and then there would be no more religious war and no race hatred. She wished to remove poverty and misery from the world by destroying money. "Why do we need money; all evil springs from it. If money did not exist there would be no taxes. Taxes make life harder; what we eat is taxes."

She claims to have developed ideas in an article entitled "The World Without Money." The manuscript had disappeared one day. Evidently the editor of a certain paper had illegally possessed himself of it, for one day she read her article in this paper. It was the same article, but with other ideas; as, for example, the "certificate of capacity," which was her work.

She wished to destroy monarchy, and was convinced that, if her ideas could be brought before monarchs, they themselves would abdicate. She wished also to overcome disease by removing physicians, since they were always creating new diseases, and thus their number was constantly increasing.

She would introduce new machines; for example, one from which clothing would come forth ready to wear. She would also do away with the army. Already she had once morally forced the soldiers to leave the exercise ground by looking at them with contempt.

She felt called to give lectures in order to win the people from their ideas; her great ideas come to her often like an inspiration, and she often hears them like a voice. At such times she feels herself divine, and she could, if necessary, conquer the world.

In the institution the patient occupies herself, proudly separating herself from the others, with the elaboration of her social problem, and writing out her thoughts as to how the social question is to be solved. These consist essentially in the destruction of all existing institutions (state, marriage, religion, etc.), without presenting any positive substitute. "Everybody should

govern himself; an educated people governs itself. It is time to strike the fetters from mankind. Free love must take the place of marriage; then there will be no longer any unhappy marriage. In place of the church must come the kitchen, and, in place of masses, eating."

She poses as the prophet of a new order of things. "When sovereigns and rulers take up my ideas, then the time will come; but it will be too late, and I shall remain deaf to their entreaties to save society."

Her future religion is the religion of Nature; her only God, the earth. Here she is imprisoned because her superiority is feared; but the day of reckoning will come. She will tear off the mask of hypocrites; a new order of things in the world will be planned, and the innumerable unfortunates who are here imprisoned unjustly as insane will be free. The greatest fools are without; the whole world is crazy. She has prophesied much that has come true (errors of memory). This propheey will also be fulfilled. In a new projeet for freeing the world she apostrophizes finally the lords of ereation and denies them the right to rule the world. This right belongs to women, since it is they who bear children.

The patient has, with a seeming store of knowledge and reminiscences from reading, a certain talent in speaking, and with great pleasure and assurance she gives a free lecture in the clinic. She defends her crazy ideas against objections with seeming skill.

The patient is without signs of degeneration, well preserved, and physically sound.

2. Religious Paranoia.

The previous life of these patients shows a disposition to mental disease in general and especially to this form. In many cases the resulting disease is only the development of an excessively religious character distorted from childhood, and is like an hypertrophy of the character.

Almost always the representatives of this group of mental disturbance are originally weak-minded, whose limited powers are unable to comprehend the ethic nucleus of religion. It expresses itself in the formal showy exterior of religious observances, and with the mental limitation and laziness of the weak-minded, one-sidedly devotes itself to the fulfillment of misunderstood religious commandments. Thus the one-sidedness of their minds becomes more and more intensified. These weak-minded persons are much influenced by missionaries and zealous priests in general, who paint the miseries of the Church, the attacks of her opponents, and Heaven and hell in lively colors, and thus excite and confuse them.

Sometimes misfortunes drive these religious imbeciles into the arms of religion and remove them from the world of material interests.

In many patients who become the victims of religious paranoia at the time of puberty there are states of mental excitement which

express themselves in religious enthusiasm, or in the impulse to become priests, to go into a convent, to make pilgrimages, etc.; and sometimes in connection with these there are visions of heavenly persons.

The outbreak of the actual disease is brought about by physical enfeebling causes, whether these be acute diseases or sexual excesses, or the inanition resulting from penances and fasting. Exciting psychic causes are disappointment in love, grave misfortunes, or enthusiastic sermons and ideas of a mission which call up scruples of conscience or render doubtful the possible attainment of eternal happiness.

The stage of incubation of this disease may last through months or years. In females there are frequently observed chlorotic symptoms, hysteria, disturbances of menstruation, as signs of physical suffering; in males, hypochondriac tendencies. In both sexes anomalies of the sexual instinct are very frequent, in that this is abnormally intense, manifested too early, and leads to onanism.

The candidates for religious paranoia at this stage have no desire for work and are lost in thought. They prefer to read the holy writings and religious tracts, give themselves up to pilgrimages and missions, and neglect their social duties. With the occasional intensified religious exaltation (in women always at the time of the menses), there are invariably signs of eroticism, which are shown more or less clearly in onanism and in sexual promiscuity, or in a kind of spiritual enthusiasm for certain priests, saints, etc.

The beginning of the active stage of the disease is characterized by the occurrence of hallucinations as a part of the manifestations of states of mental excitement, which may be intensified to ecstasy and accompanied by sleeplessness.

Sublime feelings of the sinful body being permeated by the divine breath come into consciousness, and in these states remove the individual from earthly interest and cares. A feeling of beatitude invades the patient, as if the Holy Ghost had come over them; in women at the same time there is very frequently sexual excitement even with feelings of coitus, which find their expression later in delusions of immaculate conception. In these states of ecstasy cataleptiform symptoms may occur.

At first the hallucinations are merely visions—the patients see heaven open, the Virgin smiles kindly at them, the wonders of the Apocalypse are shown to them, and they see the heavenly light around them, etc. Later, with the return of these hallucinatory ecstatic states of happiness, they also hear voices: "This is my beloved Son,"

prophecies, promises, commandments, and missions for the vocation of a prophet, etc.

Such hallucinations continue into the later stages of the disease. Asceticism and onanism are influences which cause them to return at any time with special intensity. The product of this pathologic process is delusions—in males, as a nucleus of the whole delusional system, that of being a saviour; in females, that of being the Mother of Christ. They are developed with surprising rapidity, in that the person usually originally perverse quickly loses his remaining reason. The slight opposition still encountered is felt to be the opposition of the devil, and is soon victoriously overcome.

A further important source of delusions, aside from the primordial delusions and errors of the senses, is the paralogic of these patients, as a result of which they interpret passages from Holy Writings in a perverse way and bring them into relation with their own person.

As long as the delusion is fresh and accompanied by affects and sustained by hallucination, such patients are inclined to act in accordance with it, whether that be in the harmless rôle of a preacher in the desert or as reformers and saviours of the world; and in this way they render themselves merely ridiculous and impossible in society; or they may assume the dangerous rôle of a champion of the divine faith, and not hesitate to oppose the enemies of God. Certain normal fanatics of past time went forth before the unbelievers with fire and sword. Just as in depressive persecutory paranoia, in expansive religious paranoia in general two stages of the disease are to be distinguished: one of passivity, in which the patient remains simply an observer, and receptive in his spontaneous sublime feelings and hallucinations; and another stage of activity, in which the completed delusion seeks to become actual, and thus the individual comes into conflict with the world. In the course of the disease of these world-reformers, messiahs, and virgins, along with the periods of inspiration or ecstasy, it is remarkable to note paroxysms of profound despair and depression of feeling of self, periods of doubt, of worthiness in the holy calling, feelings of sinfulness, of need, of purification and penitence, in which the patients refuse food, are mute, and give themselves up to the most intense asceticism, which may even end in self-mutilation; and as a result of precordial anxiety and diabolic visions they even think themselves to be threatened by the devil. As a rule, these demoniacal attacks quickly pass, and continued asceticism and religious concentration quickly cause a return of the heavenly visions.

The further course of the malady is uniform in all cases. Since such individuals cannot occupy a place in society, there is frequent occasion to study the termination of the disease in asylums.

In favorable cases isolation in an asylum, where the removal of all objects of religious observance and occasion for religious practices must be carried out, the religious exaltation diminishes, the patient becomes more reasonable, and with the cessation of the hallucinations the disturbance sinks to its former level of religious eccentricity. The disposition to recrudescence of the disturbance, as a result of psychic and somatic exciting causes, continues. If such patients enter an asylum, and their delusion does not disappear, then the institution seems to them either a prison or a place of martyrdom, trial, etc., and they take pleasure in the rôle of a noble, lazy martyrdom, and comfort in their glorious ideas, sustained by hallucinations, of the future assumption of their divine calling, or the time that has not yet been fulfilled.

In the beginning, such patients now and then cause disturbance by their proselyting and outbreaks of fanaticism toward the wicked world. Later they become quiet, and even sometimes, if their delusions become sufficiently faded, industrious patients.

In their paroxysms of depression, in which they are in combat with the devil, and when they give themselves up to penance and fasting, refusal of food is quite usual, but they seldom require forced feeding.

Such patients are always dangerous to themselves, because of their tendency to undertake self-mutilation and even crucifixion as a result of their own impulse or of divine command. Others are dangerous because of acts of fanaticism or commands from God, or crazy interpretations of Bible quotations.

Religious paranoia terminates in states of mental weakness, in which the delusion still exists, but only as a phrase, and is no longer excited and sustained by hallucinations or by ecstatic states of feeling.

Termination in complete apathetic dementia does not occur in this variety of paranoia.

CASE 29.—Religious paranoia.

E., aged 42, married, peasant, was brought to the asylum June 6, 1874, on account of religious insanity. He was said not to be hereditarily predisposed, and to have been mentally and physically healthy; still he was regarded as quarrelsome and given to disputes. He was also suspected of having committed perjury.

In the fall of 1873 there was a revival in the village, which the patient frequented regularly. He made a general confession, and it is said that a very severe penance was inflicted. From that time he was changed, no longer worked, and passed his days at church. He took on an unctuous manner and declared that he was destined for something higher. He allowed his hair and beard to grow because his body was holy and they should not be cut. On one occasion when he was praying in church, artificial flowers fell from a candle. He stuck these in his hair and said that they were a bridal present that had fallen to him from Heaven; for he was the bridegroom of the Virgin and destined to rule the world in the future, for the ancient God was no longer of value. His wife and children were the only obstacles which prevented him from marrying the Virgin at once; but he would exterminate these useless people.

On May 10, 1874, the patient became still more crazy. He dressed himself only in his best, adorned with the flowers that had fallen from Heaven, and walked and demeaned himself in a most haughty way, saying that he would do only that which was commanded to him from on high. He was not to work any more, for the missionary had said that he was destined for higher things, and that God would care for wife and children.

In the asylum the patient has a lordly manner. He keeps away from the other patients, and is occupied with a feeling of his high mission, concerning which, however, he does not speak much. Often he is found within the embrasure of a window with a look of ecstasy in his face. The patient sleeps little at night and evidently has hallucinations.

On January 6, 1875, the patient left his reserve. He declared himself to be almighty and conscious of his power since a month. Every day he saw the Divine Judge and the Virgin. She is kneeling and in a red dress, God the Father near her with a red head-dress. Heaven is blue, beautiful, and filled with altars. It was true that up to that time he had not spoken with the Heavenly Hosts, but the missionary had told him when he made his general confession that he was the Son of God and would become greater than God. This was still a secret. After this he had sweat blood. The church in E. was reserved for him. As yet he could perform no miracles; for the ancient God still reigned. Christ was St. John, and he the real son of Mary and the veritable son of God. He would never die, but go directly to Heaven, where he would take God's place and sit at the right hand of God.

Near the picture of the Virgin, a cane and a ring had fallen from Heaven. In the church, flowers had fallen. The cane was the rod of punishment which he must use. The flowers were signs of the ancient God now deposed, in whose place and next to whom he would be installed. He took an old umbrella in all earnestness as having been thrown from Heaven and really coming from God. He declared Mary to be his earthly wife, and that he must remain on earth until his earthly wife should die, with whom, however, he must no longer associate.

His acts and attitude are inspired from above. His duty is to visit the church. He has no other work to do; for he is almighty. He takes the asylum to be the house of God.

The patient takes pleasure in his noble, pious position, and politely refuses all efforts to induce him to occupy himself usefully. As a harmless patient, he was given over to be cared for as a chronic incurable. Two years

later I had occasion to see the patient temporarily. He was lying quietly in bed, patiently awaiting the time when he should take up his divine mission.

There was a very interesting complete anesthesia and analgesia of the body, with the exception of the mucous membrane of the tongue and a point over the parietal region. Patient did not feel the strongest electric stimuli. With his eyes closed, he was not conscious of passive position given to his extremities, though he could carry out any movements at command promptly and without any ataxia.

3. Erotic Paranoia (Erotomania).

Still another variety of paranoia, less studied and also relatively infrequent as compared with other varieties, is that known as erotic.

In all cases of my observation the individuals have been peculiar, and their abnormal psychic characteristics could be referred to hereditary influences or to infantile diseases of the brain.

The nucleus of the whole malady is the delusion of being distinguished and loved by a person of the opposite sex who regularly belongs to one of the higher classes of society. The love for this person is, as should be emphasized, romantic, enthusiastic, but absolutely platonic. These patients in this respect call to mind the knights and minstrels of ancient times, whom Cervantes has so well satirized in his "Don Quixote."

They early show a shy and awkward manner in society, which is especially noticeable in intercourse with persons of the opposite sex. Lively expressions of sexual instinct that finds relief in sensual satisfaction is sought in vain in these patients. In the male patients of my observation, who constitute the majority, there were indications of absence of sexual instinct, or perversity which led to onanism.

The abnormal character early shows itself in a soft, sentimental habit of feeling. Early, at least at the time of puberty, traces of the later primordial delusion appear, in that such individuals create an ideal for which they become enthusiastic, or they fall in love with a lady usually older, whom they have never seen or whom they have seen but once (Sander). With this there is a dreamy, languid manner, with painful and often also hypochondriac thoughts. In dreams and in fancy the romance is further elaborated; reminiscences out of fairy-tales and dream-pictures furnish food. One day they see in some person of high society of the opposite sex the incarnation of their ideal.

With this the stage of incubation of the actual malady begins. In the glances and manner of the person they notice that the latter is not indifferent to them. With surprising rapidity reason is overcome. The most harmless events become to them signs of love and invitations to approach. Even notices in the newspapers which con-

cern others come from the person in question; finally hallucinations arise. They come into hallucinatory relation with the object of their love. At the same time there are illusions. In the conversation of others they hear references to the love-affair. The patient feels happy and elevated in his feeling of self. Not infrequently there are other primordial delusions of grandeur, especially when the object of adoration belongs to a high rank and therefore wishes to obliterate the difference of social standing.

Finally the patient compromises himself by acting in accordance with his delusions, and then becomes ludicrous and impossible in society. The necessary commitment to an institution or hindrance offered to the expression of love not infrequently gives rise to the development of primordial delusions of persecution, which, however, have only a subsidiary episodic significance.

The malady is subject also to exacerbations and remissions, in that the hallucinations cause the delusions temporarily to become intensified; or they disappear, and then the delusions fade. Intermissions also occur. I have never seen a case recover.

CASE 30.—Erotic paranoia (male).

S., aged 54, single, coachman, was admitted to the clinic February 2, 1878. The history is limited to statements made by the patient, who by his companions was regarded of limited mental endowment, peculiar, and given to solitude; who had lived alone soberly, and never troubled himself much about women.

The patient states that for several months he had noticed that the sister-in-law of the baron where he was employed had manifested an affection for him. By friendly manner and inviting glances she had given him to understand that she wished to marry him. At night he heard voices which told him to go upstairs to the baroness, and he heard the baron say, "We wish to please him and give him R. as a wife." Too, the baroness expressed her acquiescence if he should continue his good conduct. The servants in the house also spoke of this, and took pleasure in his happiness; only the cook, who had herself cast an eye at him, was jealous and intrigued against him by talking to the baroness about him and putting him in a bad light, and furnishing him with inferior food.

The pleasant voices continued—among other things he heard that the baron had already gone to the emperor for permission of marriage, since the lady looked upon him so kindly, even ran after him into town, and the best society was clearly acquiescing in their union. One day he went to his master and demanded the hand of his sister-in-law. To his astonishment and pain he was repelled and sent to the hospital.

The patient was of middle size, strongly built, without signs of degeneration, pulse very slow, the arteries rigid and clearly sclerotic. There were no other functional disturbances of importance. The patient's conduct was reserved and shy; he was often sunk in dreamy thought and apparently occupied with hallucinations. He later said that every night he heard the baron

talking about the matter. He had heard him say to his sister-in-law: "Marry him, use him as long as you want him, and then send him away." He also noticed that the family had sent some one to watch over his conduct.

Since the patient was quiet and orderly and admitted that he had made a mistake, and promised not to trouble the baron any more, he was discharged on February 12, 1878. When on the same day he wished to take his things away from the baron's home, the baroness came to him and wished to give him money in order to help him. He heard her say this to the servants. A *tête-à-tête* was prevented by the baron. After this, here and there he heard the people talking about the story of his marriage. Two young gentlemen laughed at him in the street and said: "If he marries her he will be obliged to become her valet." When he sought for another place no one would take him, and he heard the people say: "We cannot take this man because he is expecting to be married." At times he heard that R. offered him 1000 florins. Thereafter he heard the baron say to his wife: "We should have one of his children as a grandchild; he is such a fine fellow and his body is as white as snow."

April 10th the people in the house said: "The baron has said that he wished to please him; if he returns he will have her hand"; and then: "If he does not accept it, I shall denounce him to the authorities."

April 11th the patient thought that he had seen the baroness and her sister in the park. Having come near their home, he heard several coachmen saying that the ladies were looking for him.

In order not to injure the ladies and the baron, he again went to the latter and declared his willingness to marry the baroness R. or, if it was preferred, her sister. He was also ready to accept the 1000 florins offered. The baron received him very ungraciously and hastened his descent down the steps. Deeply hurt and quite out of himself for pain, the patient returned home, went to bed, and burst into tears. Then the police came and took him back to the hospital.

The patient entered with an embarrassed mien and asked that they should allow the baroness to enter when she should come to make inquiry about his health. He soon learned from the conversation of those about him that she had already been there. He heard her also reproach her brother-in-law that he had shown him the door.

The patient was quiet, outwardly orderly, but much occupied with voices, especially at night, when he often got up, kneeled, and prayed. The patient regarded his detention as a trick of the baron, who had sworn to avenge himself, and had threatened to persecute him even unto death if he did not make an honorable apology. He heard the baron say by the medium of the voices: "I shall turn everything up and continue until I have found something against him, if it cost me my whole fortune." By the "rain conductor" the patient learned everything that took place and was planned without. Investigations were made concerning him. The origin of the baron's hostility was that he, as candidate for the hand of his sister-in-law, was much smarter than the baron and understood agriculture as only a few did, while the baron was an inferior agriculturist. On the other hand, he received pleasant news by the "conductor" again; among other things, that he had been designated as general of the national guard, that the emperor had given him a title, and had consented to his marriage. The baroness also let him know that she was fond

of him and wished that he would remain true to her. Finally he heard a sum of money spoken of as promised to him if he would give up the marriage. On June 3, 1878, the patient was sent to the insane asylum. At first he was quite orderly and was employed to take care of the horses. Repeatedly during this period, by means of the "conductor," he learned that the baroness had come to see him. He saw her repeatedly in the chicken-yard where he fed the chickens (illusion). After a short time the patient noticed that he was the object of attention of the ladies in the house. Now the intrigue by these ladies began. They maltreated him in riddles, interfered with his love-affair with the baroness, and made proposals of love to him. He was told now that he had three brides. From day to day the patient became more confused by numerous hallucinations. There was pleasant news of marriage, as well as of poison and unpleasant threats of death. He had pain in his back and lower extremities of the most terrible kind, and heard the ladies in the house say: "We shall torture him until he takes one of us." One night a crown was put on his head. It was hot and his head burned three days thereafter. With this he felt his brain turned around.

The wife of the coachman was also in the plot. One evening she came with her husband, who was dressed like the devil, to visit him in the ward. He felt the warm hand of the coachman's wife. When he cried out and crossed himself, everything disappeared. In the course of the summer the wife of one of the physicians insulted him with coarse reproaches from the window—that he was a dirty fellow who used cows, etc. There were direct symptoms of sexual excitement: the women in the house urged him on until he had an erection and Nature came, and he felt a pain in his back (onanism). The women oppressed him so that he could scarcely breathe. His brain also was pressed together. He heard one of the women often barking like a dog. One night she came to him through the ventilator. He did not see her, but he felt her lean body. She asked him for a kiss. When he chased her away there was a terrible noise, which ceased immediately when he prayed. It was clearly a visit of the devil whom he later saw once in the flesh. The next day he learned by the "conductor" that the woman was dead and that she thanked him for having delivered her. From this time he heard only the voices of the two other brides. The others, however, never left him any rest. They constantly asked that he marry them.

August 25, 1879, the patient was transferred to an institution for incurables.

Case 31.—Erotic paranoia (female).

L., aged 45, widow of an official, comes of a religious, eccentric, psychopathic father. Puberty occurred at the age of 12 without trouble, and the menses recurred regularly thereafter. The patient has never had children. At the age of 16 she was married, but her marriage was not happy. The patient states that, on account of a quarrel, during four years she did not speak to her husband. She became a widow after seven years. After this she lived in well-ordered, but moderate, circumstances, adopted two children: a girl whom she called her "Little Brilliant," and a boy, whom she called "Golden Cousin."

The patient is an original, eccentric, exalted person. She has always had great inclination to poetry, music, and the theater, but she did not choose the

occupation of an actress because she was not noble enough. She characterizes herself as a very sympathetic, enthusiastic woman, who is very sensitive to everything noble and good. She had always been healthy with the exception of some attacks (cerebral congestion, fainting), on account of which she had been bled. There is little else to be learned about her. Traces of hysteria are not discoverable, and the patient seems to have led an honorable and retired life. Five years ago the patient made the acquaintance in the circle of her friends of an officer of high grade. He made a deep impression on her. Because it was said that he once called her a good gentle woman and later asked news of her and sent greetings to her, she also was not indifferent to him. She approached him, sent him photographs, sent him her address, presents, and wrote him letters. Everything came back unopened, and in the street the gentleman avoided her. She was very much hurt by this, but in spite of it she could not conquer her burning love for her object of devotion. One day she noticed that, while he openly disavowed her, there were personals in the newspapers directed to her address. She recognized that they were from him by the style and by peculiarities,—for example, the initials of both their names; and there was no longer any doubt on the subject.

Thus one day she read: "If you can only think of a bleeding heart that can be cured only by your treatment." There were renewed attempts to approach him, letters, etc., the result of which was the personal: "Had you left me in peace—no answer is still an answer"; after that she inserted: "He could grow stronger in my heart." Then thereafter there was a coarse answer, and finally a reconciliation with "Forget-me-not." In answer to a new personal, "Preserve the object of my devotion, my light of Heaven," she read: "I am here, I am in Gratz." Then the patient pursued the object of her devotion and finally met him while taking a walk. Instead of a friendly meeting she heard the gentleman say "You wretch." Then she fainted. Nevertheless, in spite of this, she found afterward friendly communications in the newspapers. In spite of her pain she was forced to answer them, she loved him so much. She answered quite as kindly in letters, and wrote, among other things: "My little room is small and without adornment, but love of my object of devotion fills it." To her annoyance, however, he always passed by her house (illusion: *i.e.*, mistaking of persons), but he never came in. A trip on a matter of business took her away for a time. After her return the gentleman had disappeared. She found out his whereabouts and went after him. New humiliations and new refusal, notwithstanding the fact that she had given him all her soul. In great distress she set out for Budapest. Scarcely had she arrived when she found in the newspaper this advertisement: "Ready to make all sacrifices in order to have a reconciliation." She returns and sends a carnation with these words: "May the noble perfume of the carnation fill the abyss which separates us." Renewed humiliation and attack of fainting. Denounced by this gentleman, she had to justify herself before the police. She was dismissed after being lectured. She resolved to avoid the unfaithful one. Soon after she again read in the newspaper: "I am waiting for you." It is said that the patient in a *décolleté* gown again pursued the gentleman, and that she even wished to send him obscene photographs. This was the cause of her being sent to the hospital that her mental condition might be examined. There also the advertisements in newspapers continued: "Happy future; all is already arranged." The patient resigns herself to the inevitable. She cannot

understand the double nature of the man, nor her deception. In spite of all that has happened, she loves her object of devotion always with enthusiasm. She is incapable of all judgment.

Hallucinations are absolutely wanting in the disease-picture, which is made up merely of faneies and illogical interpretation of advertisements which are brought into relation with her own personality, and all takes plaee purely in the intellectual domain. Physical examination offers no points for an understanding of the case.

The patient is well preserved; expression, glance, and attitude all bear the impress of insanity.

CHAPTER IV.

Periodic Insanity.

THE fact that insanity recurs periodically in attacks is one that was early recognized. It points to periodic recurrence of similar changes in the psychic organ which shows a special predisposition to their recurrence.

It is probable that this disposition should be considered as a lasting abnormal change in the psychic organ analogous to that which is called the epileptic change of the brain and which is responsible for the occurrence of epileptic attaeks. Among other things this idea is favored by the circumstance that, during the periods between the paroxysm, the central organ does not perform its functions normally and is thus continually affected. Only in this way is it possible to explain that intangible or extremely slight external causes, and, as a rule, even inner functional processes, such as the physiologic phases of life (puberty, menstruation, climaeteric), suffice to give origin to periodic insanity or to excite attacks of it. Concerning the anatomic nature of the cerebral changes which lie at the basis of periodic insanity, we know quite as little of a positive nature as we do in the case of epilepsy. From the purely functional standpoint it may be presumed that there is a lasting state of labile equilibrium which may temporarily be intensified with an increased excitability of the central organ, and, as a result of this, intracerebral or peripheral irritative processes occurring periodically, or their summation, may induce the attack.

Too, concerning the cerebral changes which lie at the basis of the attack itself, we possess only theoretic assumptions.

After Neftel, in a case observed by him of recurring melancholia, had regarded a state of vasomotor spasm in certain areas of the cortex and the resulting anemia as the cause of the melancholia, and had upon this theory applied galvanization of the cervical sympathetic in the case with suecess, Meynert emphasized the possibility that in this condition there was an altered state of innervation of the vasomotor nerves. This author assumes that in the circular form of periodie insanity, in the melancholic phase of the disease-picture, there is cerebral anemia due to vasomotor spasm; and in the maniacal phase, cerebral hyperemia due to disappearance of the spasm with consequent overfilling of the blood-vessels; and that circular insanity is thus to be re-

garded now as a spastic, now as a paralytic, disturbance of innervation, forming part of a vasomotor cerebral neurosis.

This theory requires confirmation by sufficient sphygmographic studies. Experience thus far shows the intense concomitant implication of the vasomotor nerves in this disease; but the qualities of spasm and paralysis, as shown in the pulse, do not completely correspond in time with the melancholic and maniacal phases; so it seems justifiable to assume that the important vasomotor anomalies do not occasion the psychic disturbances, but that they are manifestations co-ordinated with them. Likewise, the findings of Meyer, contradicted by other observers, concerning the peculiar variations of body-weight in circular insanity, have quite as little significance in favor of regarding the disease-process as a trophoneurosis of the brain.

Too, concerning the stimuli which cause the paroxysms or phases of periodic insanity we know scarcely anything positive, at least not in the idiopathic cases. The important point in etiology must be regarded as the abnormally organized or tainted brain of the patient, whose threshold of excitability lies so deep that internal or external stimuli, which are without effect upon the normal brain, here, like those affecting the brain of epileptics, are sufficient to bring on the attacks.

In former times, and, indeed, not to go back so far as Paracelsus, but even quite in our own day, the nature of these stimuli has been regarded as dependent upon atmospheric (Reil, Spurzheim, Gall, Forster, Guislain) and especially upon sidereal influences (the moon—Friedreich, Carus, Koster). In the cases due to peripheral irritation (sympathetic) it is most frequently irritative processes affecting the uterine nerves (menstruation, puberty) which excite the attack. Psychiatry is better informed concerning the etiology, course, and symptomatology of these periodic psychoses.

Their clinico-prognostic significance as a degenerative manifestation Morel first clearly recognized and appreciated.

The great majority of these patients are tainted, and, for the most part, hereditarily. It is rare not to find a direct or family predisposition; and, if the taint be an acquired one, it is due to fetal or infantile diseases of the brain or abnormalities of the cranium (microcephaly). Still less frequently the cerebral change is due to trauma or alcoholic excesses.

The following characteristics, which occur in all forms of periodic insanity and which differentiate them from non-periodic forms, may be enumerated:—

1. The typic correspondence with reference to the course and symptoms of the attacks. In his excellent monograph Kirn has lately placed in the diagnostic foreground this fact, which had already been discovered by Falret ("Maladies Mentales," pages 458-462). This stereotyped correspondence of one attack with another holds good even for the prodromes, the content, and the periodic course of the symptoms in detail.

This correspondence, however, does not hold good for the whole duration of the malady, which is usually lifelong, nor throughout the single attack.

In the first place, it is to be noted that the periodic psychosis sometimes develops out of repeated relapses of insanity, which in the beginning does not correspond with the later and periodic attacks which constitute the congruent psychosis; and that during its years of existence, probably as a result of the influence of secondary cerebral changes, it may change its picture; for example, become more severe with more marked indications of psychic weakness.

The stereotyped correspondence between the attacks therefore holds good only for a comparatively long period of the whole duration of the disease.

Too, the duration of the attack varies essentially, notwithstanding its congruence in other respects, in that, as a result of external or internal conditions, it may be abortive or protracted; with the continuance of the disease, the attack usually becomes more prolonged, since the longer the return of an attack is put off, the longer and more intense is its actual course.

2. The whole personality is, during the paroxysms, mimically and psychically entirely different from the personality during the interval: there are two quite different personalities.

3. During the intervals there are more or less clear manifestations of a lasting disease of the central nervous system, so that the single attacks, like those of intermittent fever or epilepsy, are only more marked symptoms of a lasting disease.

The symptoms in the intervals are varied and individually very different. Often they are signs of functional degeneration, and appear in the form of a neuropathic constitution, or are definable as accompanying symptoms of a neurosis which is the expression of the constitutional taint (hysteria, neurasthenia, epilepsy); or they are the symptoms referable to the cerebral changes due to the repeated attacks (irritability, psychic weakness, especially in the intellectual domain—emotional apathy); or they are the symptoms left after an attack (mental exhaustion), precursors of a threatening attack, or symptoms of an abortive attack.

4. The periodic psychoses occur with great regularity as to time, and very often under very similar external and internal conditions. The duration of the interval may be weeks, months, or even years.

The value of this law is only in a measure brought in doubt by changing external conditions, which either tend to hasten the occurrence of attacks or to delay their outbreak.

5. The disease-picture is principally made up of affective anomalies with formal disturbances of the intellect and the consequent abnormal acts, while there is slight or even no disturbance in the content of thought (delusions) with few or no errors of the senses. Where there are delusions in cases of the latter kind the disease-picture has frequently a reasoning coloring, or presents features like moral or impulsive insanity.

6. The average duration of the attacks is, in general, short as compared with cases in which the symptoms have not a periodic significance.

7. The paroxysms of periodic insanity have a short prodromal stage, quickly reach the acme of the disease, remain with relatively slight variations of intensity at this height, and disappear rapidly, often even quite suddenly.

These general points are to be considered in diagnosis.

Since the diagnosis rests essentially upon the comparison of several attacks and upon observation of the intervals between them, not a single attack, but only the study of a considerable period of the whole disease can give it certainty.

The prognosis of periodic insanity is, as must be gathered from its etiology, in general, bad. It terminates sometimes in recovery, and this is most likely in cases that are sympathetically caused and amenable to treatment. Recovery may also be hoped for in cases where the attacks present more the character of delirium than of a psychosis, and when they are of short duration, but of frequent occurrence. For the most part it results in consecutive states of mental weakness with gradual disappearance of the attacks or protraction of them, one passing into another, so that finally there arises a persistent insanity upon the basis of mental defect.

Periodic insanity may manifest itself in the form of a psychosis or in delirium, and, in the former case, either as mania, melancholia, or hallucinatory insanity, and—in the manifestation of two connected disease-pictures—as circular insanity.

Genetically, according to Kirn, we may differentiate two forms—idiopathic (*i.e.*, due to direct central processes) and sympathetic (*i.e.*, due to the effect of peripheral irritation on the brain).

I. Periodic Insanity of Idiopathic Origin.

Idiopathic periodic insanity occurs in three notable clinical forms:—

1. Attacks which manifest themselves in the recognized forms of mania or melancholia, or in a combination of these two, in which, for the most part, the clinical picture of the lighter form of maniacal exaltation and that of melancholia without delusion are the rule, and in which delusions and errors of the senses occur only episodically without profound disturbance of consciousness. These attacks, in contrast with those of the second category, as was emphasized by Kirn, are characterized by the fact that they require more time for their termination—usually months.

2. Attacks which do not correspond with the picture of an empiric and classic psychosis, but with the features of delirium. These are accompanied by profound disturbance of consciousness, and have a peracute or acute course, and terminate in a few days, or at most in a few weeks. The outbreak and the disappearance of the attack are also much more sudden than in the foregoing group.

3. Attacks manifested in the form of abnormal impulses.

1. Idiopathic Periodic Insanity in the Form of a Psychoneurosis.

It is met, at least in institutions for the insane, most frequently in the maniacal form, less frequently as circular or melancholic, and least frequently in the form of hallucinatory insanity. The duration of the attacks averages usually some months. This varies according to external and internal conditions.

There are also abortive attacks. The recurrence of attacks takes place after months, sometimes only after years.

The disease-picture is usually that of the mild form of simple affective and formal disturbance of the intellect, in many cases presenting a reasoning character.

(a) Periodic Mania.

In opposition to the experience of other authors (Spielmann, Schüle, Kirn), according to which a melancholic stage precedes the attack, I am forced to insist upon the primary origin of the attack of periodic maniacal insanity, at least while the cases are under observation in the asylum.

There may be cases in which the first and also subsequent attacks of the disease show such a melancholic initial stage; certainly, however, this disappears early in the disease.

Besides, the decision of this question depends upon what one regards as a melancholic prodromal stage.

The heavy depressing feeling of the oncoming attack must not be regarded as melancholia, no more than the mental indisposition and disturbance of general feeling as they occur in the prodromal stage of infectious diseases, even when irritability and apprehension are simultaneously manifested (Witkowsky).

The periodic manias that have come under my observation have presented a prodromal stage, but this has seemed to me more like an aura than the prodrome of a psychosis. The premonitory symptoms belong, in part, to the vasomotor sphere (congestion, palpitation, vertigo); in part, to the sensory system (neuralgias, myodynias, paralgic sensations, headache); in part, to the mental sphere (intensification of emotional irritability); in part, to the vagus (gastric disturbances); or they express themselves in sleeplessness—all of which might just as well be the forerunners of a severe infectious disease as of a psychosis.

The outbreak of the mania is quite sudden. The disease-picture is that of maniacal exaltation; but, owing to the degenerative foundation, it presents, for the most part, reasoning features, and often the character of moral insanity and predominating delirium of activity, which then frequently has an impulsive and immoral character.

Among the affective disturbances the intensely increased emotional irritability takes the first place, and as a result the mania is especially colored by an irritable emotional state.

Owing to the want of disturbance in the content of ideas, and the reasoning and often immoral and impulsive features of all the manifestations, the conduct of the patient may give the impression of perversity when the acts, and not the whole personality and the general disease-picture as well as its intermitting character, are not taken into consideration. This is especially true of cases, which are not infrequent, in which the impulsive delirium of action comes into the foreground and expresses itself in an impulse to sexual excesses, to steal, to drink, to burn, to wander, etc. Often the general picture of maniacal insanity is only clearly recognizable during the exacerbations of the disease.

The gay mood then retreats into the background before the manifestations of irritability. These latter show themselves in sensitiveness and inclination to intrigue and quarrels. A constant feature of the disease in women is the inclination to suspect and defame women sexually as a result of sexual excitement. The exaltation of the intellectual activities causes such patients to be especially quick-witted, and to be masters in ridicule, irony, and persiflage.

The disease-picture ordinarily remains at this degree of development. Episodically there may be emotional delirium (pathologic affects), or even explosions of furious mania with delirious ideas and hallucinations due to alcoholic excesses, or to the restriction of excessive desire, which, owing to the great emotional excitability, easily occur.

To Kirn is due the credit of having described the disturbances of the somatic functions which accompany this condition. As a rule, they belong to the nervous system and are of vasomotor origin, such as cardiac palpitation, congestions of the brain with soft and full carotid pulse (vascular paralysis), alternating with vasomotor spasm, paleness, chilly feelings (especially in the extremities), with consequent secretory troubles (salivation, augmentation of the secretion of urine and perspiration), motor disturbances (alteration of the innervation of the iris—myosis, mydriasis, nystagmus), and symptoms referable to the vagus (anorexia, polydipsia, and sometimes polyphagia). These disturbances are individually extremely varied, but in a given case the symptoms peculiar to that case are quite as typic as the mental symptoms. Sleep is troubled and does not last more than a few hours. Even when the patient takes rich and abundant nour-

ishment, general nutrition falls considerably and the body-weight remains much below that maintained during the intervals. The loss of weight at the beginning and its augmentation after the cessation of the paroxysm take place very rapidly.

Ordinarily the paroxysm disappears almost as quickly as it came on. The change takes place within a few hours or days. When the intensity and duration of the attack are considerable, there is left a stage of exhaustion during which there may be still indications of mania which last some days or weeks, and which gradually disappear to give place to the interval. Sometimes this period of exhaustion takes the graver form of stupor. The consciousness of the patient who has passed through an attack, and who appears at this time to be subject to mental inhibition, may take on painful features, though this condition cannot be regarded as a melancholic terminal stage. I have never observed such a final stage. In the benign and shortest form of the periodic attacks the stage of postmaniacal exhaustion is far from being as intense or long as that which follows simple mania.

During the interval, even after a few attacks, there are lasting deviations from the normal mental condition; for there is an evident irritability of temper and dementia. Numerous nervous disturbances like those seen during the paroxysm, and the occasional recurrence of aura-like symptoms (which are perhaps to be regarded as abortive attacks), and intolerance of alcohol, prove that also during the intervals the brain is not sound.

Whether a primary attack of maniacal insanity has the significance of periodic mania is not to be decided with certainty. The following points indicate this with some degree of probability: A quick, almost sudden, outbreak with aura-like neurotic symptoms; the continuance of the disturbance at the degree of maniacal exaltation without passing on to furious mania (while in ordinary non-periodic mania the maniacal exaltation is only a short transitional period to the height of the disease); a reasoning disease-state with predominating irritability and marked delirium of action; impulsive acts, accompanied by pronounced somatic functional disturbances (neurotic, gastric). In favor of periodic mania are also shorter duration of the attack than in ordinary mania, when there is a quicker attainment of the acme, shorter duration of its greatest intensity, and a shorter stage of postmaniacal exhaustion. Besides, there is the remarkably quick disappearance of excitement, with the continued manifestation of neurotic and mental anomalies during the interval after the attack has passed off.

The prognosis of this form of periodic insanity, like that of periodic insanity having the character of a psychosis and a longer duration of the attacks, is decidedly unfavorable. In the most favor-

able case, under propitious conditions of life, the attacks remain separated by years. I have never seen a cure.

Treatment is not powerless against the single attacks. With the general indications, as they have been pointed out in maniacal insanity, a treatment by jugulation by means of moderately large or frequently repeated smaller doses of morphine subcutaneously, is frequently successful, but only when it is applied with the first indications of the oncoming attack. If the attack is fully developed, treatment by jugulation is impossible, since the attack, uninfluenced by external conditions, runs its course according to an internal law. Still, the effect of morphine to lessen the intensity, especially in cases of great irritability with constant explosions in affects with painful impulsive thinking, is not to be denied, on account of its mitigating influence.

Arsenic and quinine, so effectual in a neurosis based upon malarial infection, are quite without effect in degenerates subject to periodic insanity. Too, I have never seen any notable result from the bromides in this form of maniacal insanity, though Kohn has seen a jugulating effect due to potassium bromide (4 to 6 grams) in a case of this kind in a woman. Mendel has produced lasting postponement of the attack by means of the injection of ergotine.

CASE 32.—Periodic mania, with long attacks and long intervals.

K., clerk, single, aged 31, mother psychopathic. His youngest sister suffered with convulsions. Patient was well endowed, easily excited, of sober life. In 1861 (puberty?) and in 1873 he had maniacal attacks lasting several months.

On November 24, 1873, without evident cause, the patient again fell ill. The first symptoms were sleeplessness, impulsive thinking, indecision, talkativeness, and cerebral congestion. When admitted, December 11th, the patient was at the height of maniacal excitement. He was sleepless, restless, talkative to the degree of incoherence, gay, jocular with feeling of self much intensified, and he complained that his official position was not sufficiently recognized. He occupied himself with all kinds of foolish things which he had brought with him and which he thought to be of great value. He talked in high-flown language, declaimed poems, made speeches, and developed a mania for writing, and when paper was not at hand he used the floor, the walls, his collars, etc. He thought he was a great singer and frequently tried his metallic voice, and he was indefatigable in ridiculous jokes and foolish wit. Hallucinations and delusions were not observed. There was no deep disturbance of consciousness. The patient always knew how to explain plausibly his delirious actions *(folie raisonnante)*. Toward the end of December there was a temporary attainment of the height of furious mania (flight of ideas, incoherence, impulsive movement, and destructiveness).

There were no physical signs of degeneration and no anomalies of the skull. Owing to paresis of the right abducens, there was convergent squint,

with occasional double vision. In the right eye the ophthalmoscope showed a beginning posterior staphyloma.

There was no implication of the sexual sphere. There were neither vegetative disturbances nor congestion. The pulse-rate changed frequently and was usually above 100. Under treatment with digitalis, baths, and injections of morphine, the disease-picture during the course of 1874 sank to the degree of mild maniacal exaltation, with tendency to gather objects. Thereafter there was a mild state of mental exhaustion lasting two months, out of which the patient came without defect.

On May 20, 1875, a new attack without melancholic prodromal stage. On admission the patient presents the same characteristics as during the first attack. He goes about in a gay mood, greets the physician and his old acquaintances in a jovial way, and presents himself as the functionary of a royal insurance company and shows a small horseshoe magnet as the mysterious means with which one may establish the "symmetry" for belonging to the religion to which he has given his faith. The details of the course of this attack are like those of the preceding, only the reasoning character manifests itself more clearly and the consecutive stage of exhaustion has rather the features of moria (childish occupation with playthings, silly manner, etc.).

In December, 1875, the attack passed off, but it left behind slight, but lasting, mental weakness, which the patient himself remarked, and which caused him to refuse to resume his former occupation.

At Christmas 1877, another attack, characterized by rapid sinking of general nutrition, sleeplessness, sensitiveness to light and noises, forced thinking, and irritability; and this attack was a repetition of the previous one. Sudden abatement of the attack in May, 1878. Until the end of June the patient was exhausted, fatigued, slept much, and then again his previous state was restored.

(b) Periodic Melancholia.

Periodic melancholia is very much less frequently observed than the maniacal form of periodic insanity. On the other hand, it should be taken into account that apparently numerous cases of periodic melancholia have such a mild course that they never seek medical aid. This explains likewise the great rarity of periodic melancholia in asylum practice. Of thirteen such cases that have come under my observation, seven of which were in men, only four remained in the asylum, and all these were of a severe form with delusions and hallucinations. The delusions were elaborated upon a profound feeling of personal unworthiness. There existed violent precordial anxiety and disgust of life which led to frequent attempts at suicide.

The milder cases that occur in private practice never exceed the mild picture of melancholia without delusions. Just as in the melancholic phase of circular insanity later to be described, in periodic melancholia without delusions the inhibitory manifestations predominate over those of spontaneous psychic pain. These are mainly concerned with the painful consciousness of inhibited ideation, volition, and

feeling: *i.e.*, with a want of coloring of ideas with feelings (psychic anesthesia). The patient gives himself up to painful reflection concerning this absence of accustomed feeling, and asks whether or not he is human.

In all cases of periodic melancholia there are pronounced somatic symptoms in the mental disease-picture—sleeplessness, headache, vertigo, contracted arteries, usually with a frequent pulse, anorexia, gastric disturbances, rapid fall of general nutrition, cessation of the menses, paralgias, neurasthenic symptoms, and sensory and vasomotor disturbances—all forming an integral part of the general disease-picture. Once I saw herpes zoster over the distribution of the left supra-orbital nerve. The beginning of the attack, which often came on with gastric disturbances, and its disappearance, always took place suddenly. The duration of the attacks was from six weeks to several months. I could not make out either a maniacal prodromal or final stage (Kirn).

In all my cases I found pronounced and usually hereditary taint. The prognosis is unfavorable. Recovery—*i.e.*, freedom from attacks during years—I was never able to attain. It seems that with increasing age the attacks became more protracted, without, however, becoming especially more severe. In several cases signs of mental weakness early appeared, and during the interval slight psychic depression could be discovered. The use of opium and morphine in my observation brought about a symptomatic result, but never had any jugulating or shortening influence. The bromides in combination with antipyrin and codeine often gave relief.[1]

CASE 33.—Periodic melancholia.

Mrs. D., aged 35. On her mother's side she comes of a tainted family. Her mother's brother was insane, her mother neuropathic and toward the end of her life insane. All the brothers and sisters of the patient suffer with neuropathic conditions; one sister became insane during the puerperal state. Patient was neuropathic, and at the age of four had "inflammation of the brain," but she developed well, was gay, sociable, and mentally bright. At the age of eighteen she was married. During the first period of her married life the patient suffered much with vaginismus. Without further accidents she bore seven children (1865, 1869 [February], 1870 [March], 1871 [May], 1873,

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[1] ℞ Sod. brom., ... 9.0
Antipyrin, ... 3.0
Codeine hydrochl., ... 0.3
Aq. dest., ... 130.0
Syr. menth. pip., ... 20.0
M. Sig.: Two to seven teaspoonfuls daily.

1876 [June], 1877 [October]). In her second childbed, in which the patient nursed her baby, after a mental shock (death of a sister five weeks after her child was born), the first attack of melancholia occurred, and lasted five months, until the beginning of the next pregnancy. This attack was not connected with the return of the menses. Other causes than those given were not discoverable. The marital and social relations were the most favorable possible.

According to the patient's assurance, other typically similar attacks were observed, differing only in intensity and duration: 1870, from March till September; 1871, March to August; 1872, April to August; 1873, March to August; 1874, September to July, 1875; 1875, September to April, 1876; 1876, September to May, 1877; 1877, September to April, 1878; 1878, October to April, 1879; 1879, October to March, 1881.

I first saw the patient in December, 1880, when she came to consult me on account of the unusual length of the attack she was suffering from at the time.

The attacks begin suddenly in the midst of perfect mental and physical health. The first signs are: violent sexual excitement, which is not present in the intervals, with painful impulse to onanism; further, loss of appetite, sleeplessness, palpitation. Pronounced mental inhibition and depression quickly come on. The patient feels herself without interest, incapable of pleasure, unspeakably unhappy, and tired of life. Life seems to her a heavy burden, and it pains her to think that she has become indifferent to her duties as mother and housewife. But she is also incapable of fulfilling them. She is devoid of energy, depressed, incapable of any activity, fatigued, and exhausted, especially in the morning after she has passed a sleepless night. She has the complete despairing sense of her disease and of her mental incapability. For months at a time she does not sleep and she is forced to take chloral hydrate. She is tortured with thoughts that she will never get well, and longs for death as a deliverance. Occasionally there are reactive outbreaks of despair, which then end in an outburst of weeping.

She is without appetite, but must force herself to eat, feels oversatiated and a distressing dryness in the throat. There is constipation; the menses are regular, but scanty. Almost all the time the patient suffers with a distressing feeling of pressure in the back of the head, numbness in the hands, pressure in the feet, and pain along the inner surface of the thighs.

Suddenly one day the painful condition disappears. She sleeps again, has appetite, takes pleasure, and feels more than happy, though this feeling of deliverance from the disease cannot be regarded as a maniacal, final stage. At least, at this time she becomes again a very intelligent woman, and is regarded as such by her family. Now the body-weight increases rapidly, which in the beginning of the attack sank rapidly and which during the whole of the attack remained at not more than 59 to 61 kilograms, until her normal weight of about 70 kilograms is attained. During the intervals the patient is physically and mentally well, only she is now and then distressed by the thought that the fatal disturbance may sooner or later come on again.

The last attack, which is described in a letter dated toward the end of March, 1881, was protracted, owing to the fact that at the time of the presumed termination of it her father (April, 1880) and other members of the family died, and she had also other emotional shocks.

The patient is a woman of middle height, without signs of degeneration and without disease of the vegetative organs. At the time I examined her in December, 1880, the turgor vitalis was very much reduced; the pulse in the radials and carotid was very small, easily compressible. The patient looked ten years older than she really was. Her nervous, depressed countenance betrayed the painful emotional state.

The tongue was clean, but was said to be coated at times. There were no signs of anemia. Gynecologic examination gave a negative result. Naturally the patient had tried all remedies. Gynecologic interference on account of the genital neurosis; cold-water cure. Franzensbad had a bad effect. Quinine, arsenic, atropine, opium, potassium bromide had been of no use. Only lukewarm baths had a quieting effect, which was sometimes hypnotic. The patient was most at peace in the quiet of the country. The patient was never in an asylum.

(c) Periodic Hallucinatory Insanity.

Primary hallucinatory insanity occurring periodically is very rare, when menstrual cases and those of sympathetic origin are ignored.

Mendel has reported three cases of periodic hallucinatory insanity. The clinical picture and the comparison of the single attacks do not differ from cases that are not periodic; so that only the general course, and especially the recurrence of typically similar attacks at approximately similar intervals, make the diagnosis possible.

CASE 34.

Mrs. H., aged 54, wife of an official. She was always irritable and nervous, and mentally below the average, coming of a family said to be tainted. She had children: in 1868 and 1870. She has been in the climacteric a year (irregularity of the menses, with absence of them for months at a time; beginning obesity, rushing of blood to the head, great nervousness, emotionality, irritability). In September and October, 1883, she had much trouble on account of the lack of success of her sons in studies, and unpleasant household relations.

November 10, 1883, she complained of great feeling of malaise, violent headache, was irritable, excited, and complained of being neglected by her husband. She threatened to leave the house, was restless, easily frightened, and the night of the 11th she was sleepless. In her medicine she detected poison and said that the physician and her husband were poisoners. She destroyed a lamp because it was poisoned, and tried to run away. She became aggressive toward her relatives and could not be cared for at home.

November 18th she was brought, delirious and confused, to the clinic, where she took those around her to be enemies, thought she was at home, and was much frightened, thought that she was being poisoned, complained of bad odors, and demanded that the emperor come to protect her from her husband and son, who were poisoners and must be burned. Her son was a villain; he made noise with electricity and gave her shocks. Everything gave forth foul odors, was poisoned, and full of electricity. She wished to be divorced from her poisoning husband. She would soon die. The emperor had invited her.

The delirium became constantly more incoherent; sleeplessness, refusal of food. Pulse up to 120, no fever, no congestion, no disease of the vegetative organs. Baths and injections of morphine prescribed. In the beginning of December the patient's consciousness cleared. She thinks she must have been confused, has true memory for the events of the disease, is mentally decidedly exhausted, and with good sleep and appetite rapidly recovers. Discharged recovered, December 26, 1883. Second admission, February 18, 1885. During the interval the patient had been well, and had had her menses now and then until October, 1884, and she felt well and spoke without shyness of her former attack.

In the beginning of February, 1885, she became somewhat more emotional and irritable, because one of her sons did not study satisfactorily. February 14th she was disturbed in her sleep by a fire-alarm at night, and on the 15th by a storm. On the 17th she lost appetite, spoke in monosyllables, and was preoccupied while playing cards. On the 18th, after a bad night, she complained of feeling unwell and headache, just as in the beginning of the first attack; so that they were anxious about her. During the 18th the patient was restless, apprehensive, and wished to go to relatives in a neighboring town. Her husband accompanied her there. While on the way, at a station where they had to change trains, she became delirious, and on the platform she asked the officer to arrest her husband for he had poison and dynamite on his person and had already poisoned her twice. The poison could be seen in her hands. She should be immediately submitted to autopsy in order that the guilt of her husband could be proved.

She was admitted to the clinic the second time on February 18, 1885. The patient was delirious, excited, and said her husband was a poisoner and her son an incendiary. They wanted to poison her, burn her; the bishop must be called, as she wished to confess and make her will. Here everything is haunted, everything is poison. It was necessary that the house be surrounded with soldiers. Refusal of food could not be overcome on account of fear of poison. Great thirst at night. The gas must be poisoned; water smells and tastes bad. The patient is sleepless, disturbed, hostile, fears being blown into the air by an explosion.

On March 16th the psychosis disappears. The patient was taken from the institution on March 21st by her husband, discharged recovered. She has perfect memory for all the events of her sickness.

The patient remained normal and well until March 10, 1886, when she suddenly, and without any external cause, fell sick in exactly the same way. In the institution the hallucinatory insanity followed the same course as in the previous attacks. Toward the end of April, 1886, quick recovery; well until May 18, 1887. New attack exactly like the others, lasting until May 20th.

Fifth attack from November 15, 1887, until the end of January, 1888.

Sixth attack from February 11th until the beginning of March, 1888.

Seventh attack from the end of March until the beginning of April, 1888.

Eighth attack from August 25, 1888, until the end of September.

Ninth attack from the middle of November until the middle of December, 1888.

Since this time the attacks occur more frequently; and since the fifth attack rapid increase of mental weakness. The attacks are, as before, typic.

The later ones, however, are characterized by confusion and multitudinous hallucinations, especially those of smell.

The patient was sent to the local institution for the insane, where the attacks continue, and the mental weakness is said to have taken a predominating place in the picture.

(d) Circular Insanity.

In this form there is an alternating cyclic occurrence of melancholic and maniacal conditions, which, in distinction from melancholia passing on into mania, takes place typically during a longer period, indeed, even throughout the whole of life (*folie circulaire*—Falret; *folie à double forme*—Baillarger).

The cycle of two states recalls the fact that in many hereditarily tainted individuals there is a periodic alternation of depression and exaltation that is habitual; and it is possible that circular insanity should be regarded as an intensification of this pathologic alternation of feeling. In all cases where the ancestry could be investigated it has shown itself to be a form of hereditary degenerative insanity, the outbreak of which occurs especially at the time of puberty or in the climacteric.[1]

According to Falret's observation, with which that of others and my own are in accord, it affects women especially.[2] Not infrequently the development of circular insanity is preceded for years by attacks of simple or periodic mania or melancholia.

Circular insanity begins, for the most part, as melancholia, less frequently as mania. The initial disease-picture is distinguished from the later manifestations by unusual intensity and duration. For the most part, the opposite state follows immediately upon its forerunner, and in a few cases these states are separated by a lucid interval.

The course of the malady is made up of an alternation of the two states which form the cycle, and which usually are sharply defined one from the other and less frequently pass one into the other. This last possibility is found more in cases in which the duration of the phases is long. There may be observed also a phenomenon noted by Meyer. The temporary elementary symptoms of the opposite state to that of the picture presented may arise in the melancholic or maniacal stage. The course of the melancholic and the maniacal

[1] Ball, Annales Médico-Psychologiques, 1880, September, page 192, mentions, however, the case of an untainted man in whom the malady arose after injury to the head (during twenty-seven years, ten months of mania always followed by two years of melancholic depression).

[2] In literature, of 48 cases, 28 were women, 20 men. In my own observation of 24 cases, 16 were women and 8 men.

states may at any time be interrupted by a lucid interval; but the occurrence of the interruption is really neither so regular nor so frequent as is stated by many authors. It occurs most frequently after one or more cycles have taken place, and then as an intermediary stage between two phases; seldom does it appear as an interruption of a maniacal or melancholic phase.[1]

The duration of the lucid interval is shorter and less pure in case it occurs between the two phases. It is longer when it separates two cycles.

The duration of the whole cycle, as of the phases which make it up, is variable and not infrequently dependent upon external conditions, both in different cases and in the same patient.

There are cases of circular insanity in which the single cycle lasts a few weeks and others in which it lasts months or years. As a rule, the melancholic phase lasts longer than the maniacal. If there be a lucid interval, this is of shorter duration than the other phases. There are cases, especially those of long duration of the stages, in which this remains almost identical, while in other cases short and long phases alternate.

According to my observation, the melancholic and maniacal phases of circular insanity present nothing specific. In the majority of cases the phases do not become more intense than in mere melancholic depression or maniacal exaltation, and, owing to the exquisite degenerative foundation, these have a reasoning coloring. For this reason we meet circular insanity much more frequently in private practice than in the asylum. Only very infrequently are the functionally severe forms of melancholic stupor or of furious mania with delusions and hallucinations observed. When once the condition is developed, it usually remains the same, even though it does not reproduce itself with photographic faithfulness, though all attacks are essentially alike, presenting, at most, differences in the duration or intensity of the phases of the cycle.

In general, it may be said that the longer the duration of the phases the milder will be the form of disease.

The diagnosis of circular insanity can only be made after observation of its complete course. The following peculiarities raise a

[1] Cases in which maniacal and melancholic phases follow one another immediately, and which are separated from the next cycle by an interval, are usually called *folie à double forme*. Cases in which one phase is separated from the other by an interval are called circular insanity. Cases in which there is no interval are called alternating insanity. This alternating insanity is usually made up of quite ephemeral phases.

suspicion of this disease: a maniacal or melancholic attack, if it occurs suddenly at the time of puberty or in the climacteric and remains for weeks at the same mild degree of development; a melancholic or maniacal condition, presenting symptoms of the opposite phase episodically. Of the same value are the great disturbance of general health, the poor pulse, sunken turgor vitalis, rapid loss of weight; depressed, aged look; the loss of mimic expression, and the innumerable neuralgic and paralgic troubles in the melancholic phase; and, on the contrary, the fresh, pleasant expression (Meyer); the full, strong pulse; the unusually increased turgor vitalis, in the maniacal picture. Emmerich *(op. cit.)* calls attention to the fact that, in the melancholia that is a phase of circular insanity, the depression is much less a spontaneous painful state than in genuine melancholia, and is usually a state of reactive painful consciousness of mental inhibition.

Since circular insanity is in most cases profoundly constitutional, there is but little hope of cure. It is most to be expected when the phases are short; when they are long, they occur usually with fatal regularity to the end of life, though with increase of age the attacks usually grow milder. Even in these cases long intermissions may occur. When the disease has lasted for a long time, evidence of psychic weakness appears, though I have never seen a termination in actual dementia.

The treatment must be, in the main, symptomatic.

In a few cases of a short cycle the salts of bromine have appeared to be not without effect. Still more effectual have been opium and morphine used subcutaneously. Kretz once was able to attain cessation in two cases of mild character in the maniacal phase by the use of hyoscyamine.

The observation of Schüle, according to which the successful treatment of uterine disease in a patient suffering from circular insanity had an abortive effect upon the psychosis, points to a possibility of peripheral irritation and the importance of removing it. It is also worthy of attention that Dittmar, in the asylum at Klingenmünster, reports the experience that rest in bed in the melancholic stage put off the beginning of the maniacal stage and made the course of the latter milder.

CASE 35.—Circular (melancholico-maniacal) insanity; phases of several months' duration.

R., aged 20, student, was admitted to the asylum February 23, 1878. Father tabetic; two brothers neuropathic and excitable. One is said to have suffered with contrary sexual feeling. The patient had never been seriously ill, though nervous and excitable. He had to give up the study of medicine because he could not grow accustomed to the sight of corpses. He early gave himself to onanism, and since years it had been noticed that he

was languid and without self-confidence in society. In the fall there were symptoms of neurasthenia (lassitude, easily fatigued, feelings of weight and drawing in the extremities, difficulty of thought, palpitation, etc.). He became depressed and hypochondriac, thought his palpitations were due to heart disease, and consulted a physician, who confirmed this diagnosis. He became retiring, for he thought he noticed that everybody knew his secret vice. In the beginning of February, 1878, after feeling tired, ill, and mentally incapable, he became apprehensive, excited, and played the part of despair in a theatrical way bordering upon hallucinatory insanity. He could not sleep, he tossed about in bed, and complained that he could no longer think, feeling that he had ruined himself mentally and physically by onanism. He wanted his genitals examined, for they were changed in color. Violent feelings of fear, and sensations as if his heart were being compressed, and now and then unpleasant olfactory sensations.

On admission the patient was at the height of passive melancholia, retiring, feeling great mental pain, fearful, and inhibited in movement, speech, and thought. By fragmentary expressions it was possible to learn his state of despair due to his painful state of inhibition and his pangs of conscience because of his vice, which had made him a sinner. As a reaction to this painful state of consciousness there was evidence of how he had scratched himself all over the body. The patient is well formed, but physically exhausted, anemic. He is hollow-eyed, and his gait is shuffling and uncertain. His expression is anxious, confused, the pupils are dilated and react slowly, the face somewhat congested and dark, the pulse small, 130 to 160. The cardiac region and the epigastrium are in marked movement, and the smaller arteries, like the maxillary, show visible pulsation. The heart-sounds are pure and the heart-dullness not increased. A slight degree of exophthalmos. No disturbance of the vegetative functions. No spermatorrhea; no sensory or motor disturbances; negative findings in the fundus of the eyes. (Ordered: rest in bed, ice-bag over the heart, digitalis, milk diet.)

The patient remains extremely inhibited, mentally tortured with precordial distress, and profoundly disturbed. Only broken sentences are heard: "Oh, my poor mother, my head, this is going crazy!" The patient is unable to think out any sentence; the chain of thought is constantly broken. Neither digitalis nor quinine in large doses reduces the pulse-rate. Only after baths prolonged to three hours does the pulse drop to 100 and sleep come on. With the slightest emotion, and with every sigh and every movement of the body, the pulse immediately becomes very rapid. The vegetative functions are normal and sufficient food is taken. After the evening bath the patient is always somewhat freer. He then complains of his horrible precordial distress and mental inhibition and does not know whether he is alive or whether he can read and write. He has distressing vacancy in his head, and fears he is going crazy. During the rest of the day he is very restless, anxious, and mentally inhibited. At the same time there is great impulse to onanism, which can only be overcome by constant care day and night. At times the inhibition is intensified to slight stupor and mutism. In freer moments the patient begs to be given poison, to be shot; his head is so benumbed he cannot think; he has destroyed his brain by his vice and can no longer endure it. Now and then complaint of foul odors, headache, dullness, and pains in his extremities.

In May, with decided increase of flesh and reduction of the pulse to about 100, the patient became freer mentally and in movement. He complains of the time lost in his studies, and wishes now to regain control of himself and give up his vice. Everything seems like a dream to him. After several relapses, every one of which could be referred to renewed onanism, convalescence was established. The diagnosis was melancholia upon a neurasthenic foundation, and the patient was discharged presenting all the signs of recovery, though with a pulse of 120, on July 23, 1878.

As early as July 26th the correctness of the diagnosis was called in question, for the patient showed symptoms of maniacal exaltation, which, owing to the fact that the melancholia had disappeared, was not a melancholic prodromal stage of mania; and, further, considering the reasoning character of the mania and the fact that it did not increase in intensity to furious mania, could scarcely be considered anything less than a phase of a circular mental disturbance. The patient became joyous, talkative, restless, went to Vienna with 500 florins, and there made many useless purchases and committed excesses of all kinds.

Just as he was about to extend his journey to Paris and London, he was brought back again to the institution on August 20, 1878. He was mimically, mentally, and somatically an entirely different personality than when first admitted. His expression was lively, joyous, and the face slightly red, the eyes shining, general nutrition excellent, and the turgor vitalis increased. The patient felt better than he ever had, boasted of his knowledge and his power of thought and memory, and the remarkable examinations he said he had passed. He entertained the idea of studying philosophy, law, and medicine at once, and to matriculate simultaneously in Vienna and Paris. He said that he was a candidate for the Reichstag and for a diplomatic career, and regarded the fulfillment of this ambition as easy. He was acquainted with and knew everything; his comprehension was lightning-like. He was the most generous man and the kindest relative, although he talked about his parents in the grossest way because they sent him no money; he was a friend of the most perfect character. There was great intensification of feeling of self, which was constantly being increased by the great facility in the operation of the psychomotor processes. Gay mood, optimistic comprehension of everything, maniacal feeling of well-being. Little sleep, planless activity, which, with true *furor* and abnormal haste, mixes everything up and brings nothing to conclusion. Intensified ideational activity; disconnected, facilitated, and rapid ideation; constant writing and talking, allowing no one else to get in a word, losing himself in hundreds and thousands. His diction is affected, high sounding, marked by strong expressions and high-flown words. Great desire for alcohol and tobacco, while, when in health, the patient has no such desire.

On the evening of September 2, 1878, without any cause, in the midst of this maniacal picture there was a state of profound painful emotion, with decidedly disturbed consciousness, violent *tædium vitæ*, and an attempt to strangle himself. The following morning the patient had no idea how he had fallen into this condition, and appeared again at the height of maniacal exaltation. He wished to go to the Paris Exposition, wrote page after page of his biography, blustered, quarreled, showed sharpness in logic and in dialectic, was witty, ironic, sang, whistled, made all sorts of jokes, and would know how to run the whole house if he only could. He was always quick and

able to excuse and explain everything. His jovial mood was inexhaustible, even when toward the end of September strict isolation was ordered.

On the physical side there was tendency to congestion; pulse over 100 and usually 120; myotic pupils; fresh, somewhat dusky, appearance of the face; and splendid condition of general nutrition. Toward the middle of December gradual abatement of the mania with lasting reduction of the pulse-rate to 80 or 90. On January 1, 1879, the patient ran away and went home, still in a maniacal condition. In the beginning of February melancholia appeared again, which, however, was not nearly so intense as in the first attack, and remained at the level of melancholia without delusions, with slight precordial distress; and this is said to have passed away toward the end of June.

The beginning of July by chance I saw the patient. He appeared lucid: *i.e.*, neither melancholic nor maniacal. Toward the end of July mania again came on. The patient again wandered about in traveling, began to swindle, commit excesses, wasted money and clothing, sent pressing letters home with a threat to shoot himself if money was not immediately sent to him. In hotel registers he signed himself as Count Kristalnig, Doctor of Laws and Medicine. On August 27, 1879, he had to be sent to the asylum at K., from which he escaped on October 26th in a very cunning manner. The case-book in this institution, which was kindly submitted to me, showed that the disease-picture was typic and corresponded exactly with the maniacal state that had been first observed.

In addition to these clinical pictures manifesting themselves in cyclic alternation of melancholia and mania, there may be mentioned a rarer form which shows itself in the typic alternation of mania-like states of excitement and stupor.

Kahlbaum has employed some cases of this kind in his description of "Catatonia." Dittmar, who in general attributes only a secondary value to the mental anomaly, also mentions these cases of circular insanity, which are characterized by regular alternation of states of mania and stupor.

This variety is rarer than the foregoing. It manifests itself almost exclusively in males at the time of puberty or immediately thereafter. In all cases that have come under my observation there were signs of taint. The exciting causes were excesses in onanism or emotional shocks; a prodromal stage of melancholic depression lasting days or months preceded the circular insanity. This began with stupor or maniacal excitement, which thereafter alternated. Sometimes there was a lucid interval, usually of short duration, between the two phases. Too, profound remissions, especially in the stuporous stage, were observed. The duration of the phases varied in the same and various individuals from a few days to months. They passed quite immediately from one phase into another.

The stuporous phase was characterized by intercurrent conditions, lasting an hour or more, of psychomotor excitement in the form of imperative ideas, imperative actions, verbigeration, talkativeness, with perverse diction and religious, pathetic ideas and feelings. The maniacal phases, in contrast with the usual clinical manifestations of furious mania, were characterized by ridiculous pathos in manner and direction; inclination to verbigeration,

repeated impulsively or imperatively without end; true automatic impulsive actions (turning in a circle, turning somersaults, etc.), which arose upon the foundation of degenerative onanistic conditions, all of which were added to the maniacal manifestation of genuine impulsive movement. In the majority of my cases recovery occurred out of prolonged stupor following a series of alternating phases, in which the episodic states of excitement became less and less frequent.

The treatment was, for the most part, symptomatic. Special attention in all these patients, even during the stuporous phase, should be given to onanism, which always has a deleterious effect. In some cases potassium bromide with hydrotherapy seems to be of use.

CASE 36.—Circular insanity in the form of alternating phases of mania and stupor.

S., aged 22, single, farm laborer, is said to come of a healthy family, though his father was mentally disturbed for some time before his death, and his mother suffered with frequent headaches. The patient is said to have been well until the time of puberty. From that time on he was sickly and suffered with general physical weakness and cardiac palpitation, and on this account he did not perform his military service. Presumably the cause was the injurious effect of onanism, which the patient had begun early and practiced excessively. He is said to have been rendered languid and weak as a result of it.

In 1877, after violent excitement, he is said to have become suddenly stuporous, and during this period to have been maniacal. After eight days he was again well.

On August 25, 1878, the patient became excited where the villagers were dancing, drank too much, and was greatly affronted by the girl with whom he was in love. On the 26th he was sad, depressed, and after a few hours he was profoundly stuporous and could not be roused.

On the 28th he commenced to gesticulate, verbigerate, pray, and rave. He was destructive, danced about, was quite incoherent, and asked for copulation with the pastor.

On the 30th he was again stupid, and in this condition he came to the clinic. The patient was of middle size, quite well nourished, rhombocephalic. He had a narrow palate; pupils dilated, lazy reaction. Physically there was nothing else remarkable. The patient lay on the floor inactive, silent, stuporous, and remained in any position passively induced.

August 31st there was again a state of excitement. The patient was loquacious, recited extracts from the Bible in high German, made theatric gestures with his hands, and spoke with great pathos all sorts of nonsense; for example, "Twice six is twelve, eighteen is my brother," etc. When an attempt is made to undress him he fights desperately, cries terribly, grinds his teeth, and makes grimaces. Left to himself he stands with raised fists and threatening mien and cries only "come here." For an hour or so at a time he is quiet, seemingly lucid, even to the extent of having insight into his disease. Sometimes there are states of stupor lasting several hours, with theatric poses and cataleptic states; but, for the most part, until September 16th, the patient was in a state of maniacal excitement with almost complete absence of sleep, great confusion, mistaking those around him for relatives; confused,

great loquacity with the use of high German; pathetic affected diction, in which there was much talk of God, of the Virgin Mary, and of his sweetheart.

On September 16th the patient again became stuporous and remained so until November 14th. His consciousness is profoundly disturbed. He pays no attention to the calls of Nature and at times presents cataleptiform attitudes and forced positions. He stands for hours at a time in one spot, his eyes directed into space with a slight convergent squint. For the most part, the patient is dumb; only on one occasion did he speak in a pathetic, senseless way, remarking that there was one God and three divine persons. After this there was a short period of verbigeration—"Flea, fly," etc., otherwise he was dull, dumb, and staring stupidly. On the 13th he was somewhat freer. The patient says that the blood mounted to his head and made him confused and dizzy. There was frequently a rash-like redness of the face. It was noted that the patient, even during his stuporous condition, practiced onanism, and that then the stupor always increased (potassium bromide and rubbing; favorable prognosis).

On November 14th again a state of exaltation. The patient became sleepless, prayed, and spoke all sorts of nonsense in a pathetic way: "This is the house of misfortune, I know it is vile"; occasionally, too, verbigeration: "Fish, fishy," etc. Great confusion, disconnected words and sentences, profound disturbance of consciousness. He takes those around him for the pope and bishops. Now and then a cry of fire. There was no evidence of a pronounced state of feeling. There were joyful and painful moments. The patient is in a peculiar state of unrest. He reduces the contents of his straw mattress to bits and turns for hours at a time, as if forced, at each half turn stopping and saying some word; for example, why, cause, brother, Anthony, right, stop, regiments, physician, no, etc. After that, peculiar forced attitudes. Temporarily, on one occasion, forced asking of questions.

November 29th, the patient became quiet and stuporous. Just as on the former occasion, in the beginning of December the stupor disappeared, but there was still a certain forced condition of mien and attitude with inclination to peculiar distorted positions. Speech became free, but was still affected and in high German. In the middle of December the patient became entirely quiet, well ordered, and free in movement.

He says that he remembers all the events of his sickness. He had been quite confused in his head and everything was moving around him, and he had seen all sorts of forms. At times his feet and hands were painful and felt dead. He had been forced to turn around in a circle because this gave him a lighter feeling in his head. On January 10, 1879, the patient was discharged cured.

2. Periodic Insanity in the Form of Morbid Instincts.

This form of periodic disturbance is still but little known. In these cases, without doubt, we have to do with instincts organically excited which imperatively demand satisfaction. They form the basis and essence of the disease, and are not, as in numerous cases of simple or periodic alienation, accidental and secondary symptoms.

Science now recognizes as unquestioned pathologic manifestations the periodic recurrence of an impulse to drink and impulsive

sexual desire. The morbid and especially degenerate significance of these states is proved clinically by their periodic return, accompanied by all the clinical symptoms of periodic insanity. It is to be especially emphasized that the psychic personality during the attack is not the same as during the interval, and that the morbid tendency of the instinct belongs only to the psychopathic personality. Besides, other degenerate elements are observed, especially in the tendencies of the sexual instincts, where the impulses are often perverse and their satisfaction impulsive.

As to periodic cases of psychopathia sexualis, which are still little known, it will suffice to refer the reader to the monograph by the author of the present work. On the other hand, periodic dipsomania seems to be quite well known scientifically, and from a practical standpoint is of enough importance to be considered here.

(a) Dipsomania, or Periodic Drunkenness.

There are some individuals who are periodically attacked by a morbid condition, physically and mentally, in which the need to consume alcohol is felt with impelling force: a need to which the patient, prevented temporarily by mental disturbance from exercising his ethic and intellectual powers, can offer no resistance.

The dipsomaniac, in the first place, differs from the habitual or ordinary drinker and the chronic drunkard in the strictly episodic character of his mania to drink; from the moral weakling, who offers no resistance to the temptation to deliver himself up to alcoholic excesses, which prevents him from keeping his week's or month's wages in his pocket, the dipsomaniac differs in that an organic psychic impelling force attacks and subjugates him without regard to time, place, or occasion, and thus alone and apart, far from the circle of gay or jovial drinkers, he indulges in excesses.

The dipsomaniac is distinguished from the maniac, who, owing to a pleasurable sensation and a wildly gay humor, etc., gets drunk, in that in the former the impulse is born of a lively sensation of displeasure, and alcohol does not produce in him the physiologic effect of gayety.

The dipsomaniac further differs from the ordinary drinker in the fact that in his morbid inebriety he is not fastidious in his taste; he sees only quantity, and for want of better material becomes a prey to a perversion of morbid taste, and under such circumstances may have recourse to vinegar or even petroleum.

The dipsomaniac resembles more in his manner the melancholic who is physiologically depressed, and who often seeks in wine or alcohol consolation and forgetfulness of his sorrows and misery. In fact, it is possible, in the case of the majority, to prove that the dipsomaniac impulse occurs in the course of an acute attack of neurasthenic dysthymia with a tendency to periodic recurrence, and that it is maintained by this state of physical and moral depression; for alcohol is a means of enjoyment and stimulation for

the nervous system (like morphine, cocaine, etc.) and of a nature to render more supportable the state of mental and physical pain. Besides, there seem to be some cases in which the impulse to drink afflicts the individual in a manner absolutely primary and as the actual basis of the trouble. A more minute analysis shows that in these cases there is a state of impulsive raptus to drink, of periodic recurrence, occurring in individuals of original feeble endowment (*vide* "Moral Insanity"), such as Mendel has recognized; or that they are cases of genuine periodic dipsomania, in which the clinical manifestation is that of irritable angry mania, if the patient is kept from satisfying his dipsomaniac impulse.

Probably dipsomania occurs only in tainted individuals. Thus is explained the fact that it breaks forth often during the physiologic phases of menstruation, pregnancy, and the climacteric, which seem to intensify predisposition to this disease; and, too, very frequently the presence of constitutional neuroses (neurasthenia, hysteria, epilepsy) is observed. The primary exciting cause is usually some lively moral emotion, or physical or intellectual overwork. An acute state of neurasthenic dysthymia thus induced, or an exacerbation of a neurosis that has existed for a long time, is immediately added and represents the prodromal stage, which may last some hours or even several days.

The patient becomes sleepless, congested, complains of pressure in the head, increasing mental inhibition and discomfort and desperate *ennui*, general fatigue, nervous excitement and restlessness, apprehensive oppression, hot and cold feelings, and paralgic sensations. Then an instinctive, imperative, impulsive desire for alcohol awakes, which finally, after a fearful struggle that may go even to the extent of *tædium vitæ*, conquers. The very first glasses bring (temporary) relief, in which alcohol produces sleep and indifference, and acts as a stimulant, without, however, giving the patient real pleasure.

The neurasthenic and dysthymic patient is forced to have recourse to the bottle again and again, just as the *habitué* of morphine in a certain stage is forced to take injection after injection. To these signs of the disease those of alcoholic intoxication are gradually added, which, however, like the altered toxic effect of morphine in certain psychic exceptional states, are slighter and occur later, as a rule, than under normal circumstances.

This continues some days, sometimes even weeks; but during this continuance there may be numerous attacks grouped together or separated by remissions or intermissions. Finally, and usually with sudden subsidence, the attack ends. The patient becomes quiet, exhausted, and feels no desire for spirits. He begins to sleep again

and passes through a stage of mental torpor, with more or less pronounced manifestations of acute alcoholism, into his previous condition; but often for days there is restless, unrefreshing sleep, mental prostration, and general discomfort, and the patients are, even in the absence of these troubles, tortured with remorse.

Where the attacks are protracted or frequent, the paroxysm may be followed by symptoms of delirium tremens, and symptoms of chronic alcoholism may develop.

The attacks of dipsomania may be separated by weeks or months, sometimes by a year. The prognosis is, in general, unfavorable. Only confinement in an asylum during some years, in connection with tonic treatment (*comp.* neurasthenia) and the empiric use of drugs which may abort (injections of morphine) the attack or calm it (opium, paraldehyde, amyl hydrate) when developed, holds out any hope for these patients.

CASE 37.—Dipsomania.

K., merchant, aged 59, a self-made man of great capabilities and great industry, consulted me in June, 1886, on account of dipsomania. His father was nervous and easily excitable. The patient said that he himself was nervous, excitable, emotional, and always melancholy, sentimental, easily irritated when things went against his wish, and that it was only with difficulty that he regained his equilibrium, losing sleep during a long period. A relative stated that the patient was never really in a state of emotional equilibrium, always either depressed or exalted. The patient had many cares and much excitement in his family and his enormous business.

In 1873, as a result of financial anxieties, he became acutely neurasthenic, dysthymic, sleepless, lost courage, and sank in despair. In this condition, contrary to his habit, he began to drink. After eight days he was again in his usual condition. Thereafter the patient was relatively well, very active, and well ordered in his life. Four and one-half years ago, following violent mental excitement, a dipsomaniaco-maniacal condition came on, and had recurred since at intervals of four or five months. Prodromal symptoms, in the sense of irritability of the nervous system, could be found, dating back two years before this attack, for the patient was more quickly fatigued mentally and physically, slept badly, was tired in the morning, felt languid, showed increasing emotionality and irritability, and reacted with unusual severity to unpleasant things. For these neurasthenic symptoms now and then the patient took brandy, with some good effect. Occasionally he took *eau de Cologne*.

The prodromes of attacks last even ten days, and consist of manifestations of increasing neurasthenia, as well as dysthymia and predominating symptoms of psychic inhibition.

There are great fatigue, mental and physical depression, lack of interest in everything, even to the extent of apathy and abulia, with great desire for sleep. The patient characterizes his condition at this period as that of the moral and physical pain of a debauch: he is extremely weak, morose, and has a repugnance for the most important social relations; desperately bored, and has no interest in anything.

In order to free himself of this unbearable condition he resorts to spirits, and that the more willingly because they bring him sleep. In the absence of wine and liquors he had resorted to ordinary spirits, even vinegar and petroleum. He never drinks from thirst, but as a result of the necessity of overcoming his terrible condition. He had never had any pleasure from drinking. His tolerance for alcoholics seems remarkable to him. Thus, at the height of an attack, he would drink as many as twenty-five glasses of brandy and much wine in a single day, without becoming intoxicated. His acquaintances report that when the patient is kept from drink he becomes angrily excited, goes out of the house in *negligé* in order to satisfy his impulse in the lowest drinking places. Left to himself, the patient passes the greater part of the day in bed, abundantly supplied with brandy and wines. He avoids all mental activity, reading at most nothing more than children's stories, and will see none of his family. The patient remains in this condition sometimes as long as four weeks; yet there are intermissions of from two to ten days; so that protracted attacks are really a series of repeated attacks. At the height of the attack the patient is always sleepless. During this time *libido sexualis*, which is otherwise normal, is absolutely wanting.

The termination of the attack occurs quickly, with disappearance of the dysthymic, abulic, and neurasthenic troubles, and with the return of satisfactory and refreshing sleep, but the sleep is at first troubled with frightful dreams. No symptoms of alcoholism. During the interval, with the exception of his habitual nervousness and his unstable emotional state, which alternates constantly between extremes, he is well and has no desire for alcohol.

The physical examination shows nothing abnormal in a man powerfully built. The neuropathic expression of the eyes is noteworthy. The treatment in the beginning (hydrotherapy, sea-bathing, mountain climate, etc.) was directed to toning up the nervous system. The attacks returned typically, but under treatment with opium (up to 0.15 gram of extracti opii aquosæ) they ran a mild course, so that two glasses of red wine and one bottle of beer a day sufficed to satisfy his desire for alcohol. Paraldehyde had a satisfactory hypnotic effect.

(b) Periodic Recurring Abnormal Sexual Impulse.

Aside from cases of occasional and uncontrollable sexual excitement occurring in connection with states of periodic maniacal excitement that are heterosexual, but sometimes also homosexual (cases of Servaes, Gock), and forming pictures of temporary satyriasis or nymphomania, there are other cases in which, without simultaneous general mental disturbance, an abnormal and often perverse sexuality forms the nucleus of the entire mental disturbance, as in dipsomania, and occurs only in the form of periodic attacks, while in the intervals the sexual impulse is neither abnormal nor perverse. The cases of Anjel and Tarnowsky were in some instances examples of pædophilia erotica, in others of pederasty.

In the paroxysm which came on suddenly and as suddenly passed off, lasting usually only a day, there was a condition of mental ex-

citement with sleeplessness, with painful ideas and impulses to act in the sense of the perverse sexual inclination.

At the same time there was anxiety, with constantly increasing impulse to the sexual act which was otherwise held in horror, but during the attack was desired because it would bring an end to the condition.

A peculiar phenomenon belonging here is observed in cases of paroxysmal pathologic love of married women for other men, of such power that all thought of shame, morals, and honor are overcome, and the love for another is shamelessly expressed, even to the husband.

In the beginning of the trouble the efforts that are made to overcome this illegitimate inclination induce violent attacks of distress.

During the existence of the pathologic condition there is complete indifference toward husband and children, complete lack of insight into the significance and results of the scandalous conduct that takes no account of marital worthiness and family honor.

In contrast with the non-psychopathic, though abnormally libidinous, misalliance, it is remarkable in these cases that the sexual error is only an episode in the life of an honest wife, who, once recovered, expresses the most profound sorrow at what has taken place.

It is also remarkable that the abnormal episode is not regarded so much a sin as an unavoidable misfortune arising out of an abnormal mental condition.

Such paroxysms may last even several months.

II Periodic Insanity of Sympathetic Origin.

Here we have to do with insane conditions caused by peripheral irritation periodically affecting the brain. That these irritants have this effect is to be explained by the abnormal constitution of that organ, which, without exception, in such cases, is demonstrable and usually found to be a result of hereditary taint. Most frequently such irritation has its origin in the genital nervous system, and it is especially the process of menstruation, as well as diseases of the uterus, according to Kirn's observations, that occasion such paroxysms of frequently repeated insanity with typically congruent symptoms and course.

Menstrual Insanity.

The purest form of sympathetic insanity is menstrual: *i.e.*, mental disturbance associated with the period or the process of men-

struation, which is manifested clinically in the form of a psychosis like mania, less frequently melancholia, or as delirium. In all cases of this menstrual insanity we have to deal with an originally abnormal excitable brain, which, before the attack as well as during the intervals, reacts pathologically. The majority of individuals afflicted with this disease were hereditarily tainted, and all presented a neuropathic constitution, were originally weak-minded, or afflicted with functional and some with somatic signs of degeneration.

The neuropathic constitution was early manifested and very evident after the time of puberty. In the majority of cases, in health the menses were accompanied with nervous disturbances, mental excitement, and depression. In many cases the sexual psychosis was preceded by neuroses (hysteria) or attacks of non-periodic insanity.

In numerous cases, upon the basis of such a predisposition, slight external causes — emotions, alcoholic excesses, physical diseases — were sufficient at the time of the next menstruation to cause the outbreak of the disease. Where the disease was once developed, merely the process of menstruation, with its physiologic influence to increase the excitability of the central nervous system, sufficed to bring on the paroxysm, since, analogous to the brain change in epilepsy, a permanent functional alteration had developed in the brain.

It is worthy of note that in developed cases, even when the menstrual discharge is wanting, at the time of the periodic recurrence of ovulation the attack may occur.

The first outbreak of the disease may take place in any menstrual period of the sexual life; in general, the earlier, the greater the predisposition. Diseases of the genitals and irregularity of the menses are frequently found; still, the disease occurs in cases where no functional or anatomic abnormality of the sexual apparatus exists.

The pathogenesis must be sought in vasomotor disturbances which arise in the brain reflexly from the ovarian nerves excited during the process of ovulation. The fact that the physiologic process of menstruation causes such pronounced reflex effects is to be explained by the degenerate brain of the individuals prone to develop menstrual insanity. In accordance with the degree of this taint there are menstrual nervous symptoms which vary from simple migraine to attacks of insanity.

It is to be presumed from physiologic experiments (Schlesinger) that the centers of the vascular and uterine nerves lie close together and manifest a similar reaction to certain stimuli.

As prodromes of menstrual insanity, which sometimes precede it several days, are to be mentioned sleeplessness and great emotional irritability. Not infrequently the symptom-complex begins with a

state of congestion, headache, vertigo, and a feeling of oppression in the epigastrium.

The insanity occurs before, sometimes after, and sometimes during the process of menstruation. The relation in time to menstruation may be altered during the course of the disease without any essential change in the disease-picture. In cases of premenstrual insanity frequently the attack ceases with the beginning of the menses.

Menstrual insanity resembles other forms of periodic insanity in this: its outbreak and end are sudden, and the single attacks are alike, even in their smallest detail; the personality during the attack is mimically absolutely different from the personality of the interval, and during the intervals numerous psychic and nervous symptoms are present.

To the disease-picture special features are lent by the sudden outbreak and ending of the attack, by the usually very marked cerebral congestion, the profound disturbance of consciousness with the resulting summary memory, by the great number of hallucinations, and the frequent termination through a stage of stupor. The disease-picture may be maniacal, especially in the form of angry mania, melancholic, or one of hallucinatory delirium. The never-failing symptoms of the interval referable to the nervous system are partly the expression of the neuropathic constitution, partly symptoms of the accompanying hysteria or other nervous symptom-complexes. It is often difficult to distinguish the results of one attack (fatigue, stupor) from the prodromes of an attack to follow.

There are cases in which the attack recurs typically with every menstrual period. In time, under such circumstances, the attacks become more intense and severe, and at the same time more prolonged; then secondary states of mental weakness arise (general confusion, dementia). The excitement may then become permanent, one attack passing over into another.

Spontaneous temporary absence of attacks occurs, sometimes due to severe acute diseases (typhoid), or to amenorrhea accompanied by cessation of ovulation, when the exciting cause of the recurring attacks is removed; but this also is aided by the influence of care in a hospital.

The prognosis, when the disease is not of long standing and the attacks do not recur regularly, is not unfavorable, even though the predisposition cannot be overcome. From a therapeutic standpoint the causal indication demands treatment of the neuropathic constitution: *i.e.*, treatment of the increased excitability of the brain psychically, avoidance of sexual excitement, strengthening the con-

stitution (hydrotherapy), treatment of anemia (iron), and treatment of any uterine diseases or anomalies of menstruation that may be present (gynecologic treatment).

Prophylaxis of the single attack demands exact attention to the menstrual period, determination whether the attack is premenstrual or postmenstrual, and an attempt artificially to diminish the increased excitability at the dangerous period by the use of bromides in doses not under 6 grams a day, and under some circumstances increased to 10 grams. During the intermenstrual period the treatment should be interrupted in order to avoid poisoning. Where there is amenorrhea and irregular menses, bromides must be given continually in smaller doses (from 4 to 6 grams). This is quickly increased to 8 grams as soon as the menses appear. Atropine, recommended by Weiss, as well as ergotine, recommended by Schlangenhausen, in cases under my observation have had neither a preventive nor ameliorating effect. Symptomatic indications demand during the attack rest in bed and isolation. Bromides have no abortive effect here, but they ameliorate the attack. Where there is violent congestion, ice-bags and baths are useful. In some chronic cases injections of morphine have an effect to ameliorate and shorten attacks. They have no prophylactic value.

CASE 38.—Periodic menstrual mania.

Mrs. A. S., aged 23, of very tainted family. As a child was scrofulous and developed with unusual rapidity. She was talented, always eccentric, and given to enthusiasm, and was nervous and emotionally very excitable. Menses at 16, thereafter regular, but frequently profuse. At 18 hysteric manifestations, with clonic and tonic cramps. Later great nervousness and frequent attacks of fainting.

In the summer of 1874 the patient fell in love with a gentleman who knew nothing of her preference. She became very much exalted, and her relatives finally destroyed her illusion. As a result of this she became hypochondriac and melancholic, abulic, and thought that she had heart disease and was soon to die.

October 20th, menses for some days; thereafter exalted, gay, restless, sleeplessness. October 30th, within a few hours a state of intense mania developed. Joyful affect going on to ecstasy. Great motor excitement, flight of ideas, confusion, alliteration and rhyming, erotic manifestations, and delirium. She is pregnant and constantly talks about heart, love's bond, cavalrymen, her divine Theodore, to whom she has given her heart and hand. Those around her are struck and kicked, out of pure pleasure in movement. There is, at the same time, salivation, but no signs of cerebral congestion. Pulse, small, 80; no anemia; no motor or sensory functional disturbances. Constipation. Prolonged baths. Potassium bromide, 4 grams.

November 6th, sudden transformation of the mania into quietness and lucidity, with insight into the disease. Patient is very emotional and sensitive

to sounds and light, much fatigued, and in need of rest in bed. The patient has only a summary memory for the events of her disease. Prolonged baths at night ameliorate headache, impulse to think, and sleeplessness. November 12th, menses profuse until November 18th. November 16th, potassium bromide was suspended. November 25th, without any cause, after having headache several hours, the patient became maniacal. The attack came on suddenly, reached its acme within a few hours, and went through a course exactly like the first: continued expansive affect, gay, erotic, great ideational activity, incoherence, with the same thoughts and errors in the recognition of persons as on the first occasion. December 6th, sudden cessation of mania, with the same symptoms during the interval as after the first attack. From November 25th until December 6th the patient was given daily 8 grams of potassium bromide —it was used symptomatically, merely during the height of the paroxysm, and showed itself, for this purpose, to be without effect. From November 11th to 16th, menses. On December 20th, after a sleepless night and some headache, another attack of mania lasting until the 28th, having exactly the same features as the former attacks. Since now the periodic menstrual significance of the case was beyond all doubt, from December 20th a dose of 8 grams of potassium bromide was given daily in the hope of attaining a preventive effect. January 7th, depressing thoughts, anxious dreams, but no mania. From January 13th on 12 grams of potassium bromide, and on the 15th of January headache and intercostal neuralgia. The critical period was passed without an attack, but from the 20th of January on there were signs of commencing intoxication with potassium bromide: great sleepiness; muscular weakness; slow, small pulse; weak heart-sounds. February 5th, menses. The symptoms of intoxication increase. Stupor, general paresis with intact sensibility and reflex excitability. Vomiting of thick slime, anesthesia of the throat, poor radial pulse, impossibility to eat, to sit up. With the continued use of 12 grams of potassium bromide the critical period is passed. After February 20th only 4 grams of bromide were given. Reeling, staggering gait, total dementia, weak heart-sounds, thready pulse, 114. After February 25th, potassium bromide is discontinued. From February 27th disappearance of stupor, muscular and heart weakness. March 10th, all signs of bromide intoxication completely absent; menses; 2 grams of potassium bromide; on the 13th, 6 grams; on the 15th, 8 grams; on the 17th, 6 grams; and the 21st, 3 grams; no alteration of the general condition. March 22d, suspension of potassium bromide, which on this occasion left behind no traces of intoxication. Aside from slight nervous troubles, quite well in the interval. April 4th, 4 grams of potassium bromide; menses on April 6th; on April 9th, 6 grams. On April 11th, menses ended. On April 13th, 4 grams, and on the 16th of April suspension of potassium bromide. Aside from some headache, on this occasion there was nothing abnormal to note. Thereafter frequently globus and intercostal neuralgia. On May 3d, menses; 4 grams of potassium bromide, daily increased by 1 gram. On May 8th, menses finished. On May 10th, 6 grams; May 14th, 4 grams; May 18th, suspension of the bromide, feeling perfectly well. On May 26th, menses a few days too early; 4 grams of potassium bromide the following days. Globus and weeping, and on May 29th, 6 grams, and on the 30th of May menses finished. June 1st, suspension of the bromide. In the beginning of June discharged recovered. Thereafter patient was well and in excellent physical health, the hysteric troubles disappearing entirely. No more mental

disturbance was observed. At the time of the menses, which occurred regularly, as a precaution potassium bromide was used as before. After January, 1876, with the suspension of the drug, there were no other psychopathic symptoms connected with the menses.

PART THIRD.

Mental Disease Developing out of Constitutional Neuroses.

In the general description of abnormal predisposition (*comp.* page 361) attention was called to the frequency with which, in individuals afflicted with such predisposition, neuroses occur, the effects of which can be traced like a red thread through the whole of the patient's life.

This is especially true of states of neurasthenia, hysteria, and hypochondria. This is not an accidental association, but one of the clinical manifestations of predisposition in general. The neurosis is an integral factor in the predisposition and development of the psycho-physical personality,—a burden, in the true sense of that word,—which the unfortunate must bear with him through the greatest part of his life, which only seldom and temporarily he can unload, and which very frequently causes mental invalidism.

The neurosis has a profound constitutional significance clearly based on the abnormalities of the constitution and development of the central nervous system, and stands in clear and decisive contrast, from a prognostic standpoint, with the same neurosis manifested in a benignant and episodic way when a well-constituted nervous system becomes afflicted with it. We have to deal with quite analogous etiologic, clinical, and prognostic differences, just as in the case of the psychoses when they develop upon a predisposed or an untainted foundation. We have but to appreciate the difference between a constitutional *folie raisonnante* manifesting itself in mild melancholia and a mild melancholia in the sense of a psychoneurosis. Similarly there is the same difference between a postpuerperal or a postfebrile acute or subacute neurasthenia and a constitutional neurasthenia, even though benign and mild, manifested in early years and developed with the process of puberty, continued throughout life like a fatality in a central nervous system morbidly predisposed, and though from time to time latent, always reappearing as a result of slight accidents. Such a personality during all his life is menaced

with mental disease, which often must be interpreted as the terminal stage of a morbid state, tending always to greater and greater development, and becoming more and more extensive and degenerate.

CHAPTER I.

Insanity on a Neurasthenic Foundation.

The Asthenic Neuropsychosis.

The name neurasthenia, or nervous weakness, covers a state of the general nervous system which is appearing more and more frequently under the circumstances attending our modern civilization. Its fundamental symptoms clinically are the abnormal impressionability and extreme exhaustibility of the nervous functions, which probably are the expression of disturbed nutrition of the central nervous system that brings about insufficient storage of force and but slow restoration of energy that has been expended.

Since asthenic persons that present this characteristic in their tissue-changes and their functional activities eat and digest well, and may even look fresh and well nourished, the assumed disturbance of nutrition in nerve-centers must be of a minute kind, perhaps a trophic anomaly of the ganglion-cells, owing to which they can create only inferior chemic products out of the nutrient material afforded them. The central nervous system is thus functionally injured. This defect shows itself essentially in that the inhibitory activity of higher centers is insufficient. This explains the abnormal facility with which irradiation and reflex effects occur, the most important sources of which are the genito-urinary tract, the vegetative functions, and the brain.

These reflex influences are especially clear and active in the vasomotor and cardiac nervous territories, as a result of which blood-pressure and tension are subject to constant variations. It is still a matter for discussion whether neurasthenia is a distinct neurosis or a peculiar pathologic manner of reaction of the central nervous system. Every observer of experience will admit that neurasthenia presents a grouping of clinical symptoms that is peculiar, and is a disease-picture unique and always easily recognized, notwithstanding the great variety of symptoms it presents, and which occur in other neuroses as if they had been borrowed from neurasthenia; that there are cases presenting transitional forms to other neuroses; that cases may be complicated even with hypochondria and hysteria.

Neurasthenia is a general neurosis—*i.e.*, one affecting the whole nervous system; and, since mental disturbances play an important rôle, it may be called a neuropsychosis. Occurring in a benign form in persons without predisposition, and due to a temporary and removable cause, it has a subacute course, and, at most, after a few months it ends in recovery. The constitutional form, with which we are here concerned, is a chronic neurosis, continuing through years or decades with a course presenting remissions and exacerbations, and ending not infrequently in invalidism or mental disease.

Rarely its beginning is sudden, and under such circumstances it is always based upon marked predisposition and a violent, shock-like exciting cause.

As a rule, this disease develops gradually, with manifestations of irritation and exhaustion of the nervous system, which at first are overcome by rest and sleep, but which finally become permanent, because the central organ is no longer able to establish an equilibrium between production and expenditure of nervous force. The symptoms of exhaustion are disturbances of general feeling in the sense of general fatigue, lassitude, painful feelings of mental inhibition and difficulty of mental activity, need of sleep, food, and drink, and even of stimuli.

Very early the mind suffers and the patient is troubled with an anxious feeling of threatening serious disease. Very soon, to these symptoms of exhaustion those of excitation are added — emotional irritability, erethism of the cortex—as a result of which the imagination becomes abnormally intense, and certain thoughts, especially those of a painful character, are constantly present, and even at night do not allow the exhausted brain to rest, continuing even in sleep. Sleep thus is often broken and seems to be a half-waking state of troubled dreams, that brings no refreshment. Other early symptoms are vasomotor, or congestions of various regions (dullness in the head, congestion of the brain, cardiac palpitation, feelings of oppression, etc.; anemia, and vascular spasm, which may cause local asphyxia, cold feelings, etc.).

The most important general symptom in the course is the feeling of broken physical and mental power, and depression as a conscious reaction, with lack of hope in the future, that may go to the extent of desperate nosophobia. With the continuance of the fundamental disease the groups of symptoms and their local manifestations may change. Accidental injurious influences are frequently sufficient to cause this; for example, an error of diet may cause temporary predominating gastric troubles; a moral shock, predominating affection

of the cardiac nerves; or relative mental overexertion may induce predominating cerebral symptoms.

A description in detail of the elementary symptoms of the disturbed nervous functions as they occur in neurasthenia must, in the first place, take into consideration the mental disturbances.

Mental disturbances are constant, and their character is that of depression caused by the feeling of severe physical illness; and on the formal side they are distinguished by the facilitation of emotional activities, which, besides, are of abnormal duration and intensity, and have a further injurious effect through the influence of the vasomotor functions which stand in such intimate relation with the emotional life.

The principal source of emotionality lies in the feeling of being ill and disturbances of sensation (reduced muscle-tone, diminished physical and mental power of activity, and the consequent involvement of self-confidence). The ideas are necessarily under the influence of this state of feeling, and it thus becomes nosophobic, which temporarily may take on the features of actual imperative ideas.

The concrete content of the latter, as a rule, is to be referred to somatic processes. A frequent idea of this kind is that of losing the reason, a nosophobic erroneous interpretation of pressure in the head, or inhibition of thought. Others are ideas of threatening apoplexy, of sudden danger in general, associated with palpitation, feeling of oppression, globus, etc. Such patients then hardly trust themselves out of the house, in carriages, to remain in a closed room, or to walk in a deserted, open space. In a similar manner, there are ideas of danger from an approaching storm, in looking at poisons, metals, dogs, etc.

Such ideas have a noteworthy effect upon the feelings (anxiety, oppression), upon thought (confusion), the will (incapability to act), the vascular system (vascular spasm, pallor, palpitation), upon the secretory organs (diarrhea, vesical spasm, diminution of the salivary secretion, perspiration), and upon the muscle-tone (weakness of the legs, trembling, etc.).

At the height of the emotional state the idea of danger may become an actual delusion with the apprehended event as actually taking place, to be fully corrected only when quiet is restored. In all directions the activity of ideas is interfered with because of inhibitory processes. Apperception is also faint and temporarily may be without the coloring of accompanying feelings. Thought is rendered difficult and may reach complete lack of comprehension, and fatigue comes on quickly. Reproduction is indistinct (weakness of memory), and judgment is difficult and uncertain.

The feeling of weakness and the disease paralyze the energy and activity of such patients and render them lacking in courage, inconstant, cowardly, relaxed, and indecisive, even to the extent of temporary incapability of self-guidance.

Sleep suffers almost always, in that the psychic organ comes to rest with difficulty, owing to the continuance of psychic stimuli (affects, ideas, fancies—going even to formal cerebral erethism) or on account of physical processes (palpitation, feeling of pulsation, muscular unrest, etc.), and frightful dreams often interrupt it. In general, sleep is light, unrefreshing, and more like a state of half-sleep, as if brought on by narcotics. Sometimes, on the other hand, it is abnormally deep and long-continued.

The sensorial disturbances consist partly of symptoms of irritable weakness (hyperesthesia, emotional coloring of impressions, extreme exhaustibility of the functions, going to the extent of extreme exhaustion), partly of those of subjective excitement (*mouches volantes*, tinnitus, etc.). Neurasthenic asthenopia is a very troublesome symptom.

Sensory disturbances are very frequent symptoms. Cutaneous, as well as muscular and visceral paralgias, are the most frequent. Then come neuralgias and paresthesias. Anesthesias are infrequent. These sensory disturbances do not affect any particular nerve territory. A very important symptom in such conditions is spinal irritation.

Expressing the disturbed state of general feeling, there are great fatigue, feebleness, and quick exhaustion in such patients. These cannot be regarded as phenomena related to fatigue. They are often more pronounced in the morning after waking, and in general are markedly dependent upon psychic influences.

Frequently there are central vagus manifestations in the sense of changing bulimia and anorexia and digestive and secretory gastric disturbances. The frequent desire for stimulants is remarkable, which temporarily better the neurotic condition (alcohol, tobacco, coca, etc.). This gives rise to the danger of abuse of them, with chronic intoxication. Too, idiosyncrasies with respect to food and intolerance of certain drugs (iron, narcotics) are not infrequent. The vita sexualis is reduced in activity, notwithstanding episodic states of excitement.

Vasomotor disturbances play an important rôle. The irritable weakness—*i.e.*, the abnormal impressionability and rapid exhaustion of the vasomotor system—is indicated by the changing color of the face, the variations in the distribution of the blood (vascular spasm) in the extremities, often contracted pulse going to the extent of local asphyxia, the varying feelings of heat and cold, the oppression of the heart that may reach the intensity of angina pectoris, and the precordial distress (vascular spasm in the domain of the cardiac arteries?). Probably a painful feeling of dullness and pressure in the head (head-pressure) depends upon a local vascular spasm, which, for the most part, is accompanied by paralgias and increased inhibition of the psychic activity, as well as by great mental depression.

Phosphaturia, oxaluria, general unilateral or partial hyperidrosis, defective secretion of the sebaceous glands (dry skin) and of the secretions in the joints (creaking joints) are to be mentioned as among the secretory disturbances.

Reduced muscle-tone, rapid exhaustion with a feeling of stiffness and defective response in the functionally exhausted groups of muscles, actual diminution of innervation (weak, low voice, etc.), tremor and fibrillary twitchings are to be mentioned as some of the motor disturbances.

The reflexes in general are increased as a result of functional weakness of the inhibitory mechanism (twitching on falling asleep, increase of the skin and patellar reflexes, cramps in the calves, precocious ejaculation, pollution, vesical spasm, etc.).

Chronic neurasthenia is almost exclusively based on a neuropathic taint. It is one of the most important clinical manners of expression of this taint and the foundation upon which develop other neuroses (hypochondria in men, hysteria in women) and psychoses.

Undoubtedly this neurosis can also be acquired as a result of acute severe

disease, mental and physical over-exertion, moral and physical shock (railway spine), frequent childbearing, and sexual excesses, especially onanism.

Special forms of neurasthenia may be described as cerebral, spinal, and visceral. These forms may occur simultaneously (general neurasthenia), or combined in various ways, or one after another, in predisposed individuals.

Regional ageneses, in Arndt's sense, may form the predisposition in an individual to the development of a certain form of neurasthenia. Without any question, too, special exciting causes are also of influence in this sense.

The cerebral form occurs readily as a result of mental over-exertion of all kinds (mental strain, especially in connection with emotional excitement, etc.). In this form the disease-picture is especially characterized by predominant mental and sensorial functional disturbances. The mental inhibition may extend to absolute incapacity, and the inhibition of feeling may reach the degree of psychic anesthesia. The inhibition of apperception may reach even the degree of temporary mental blindness and mental deafness. I have even observed amnesic aphasia and agraphia. The depression, which is never wanting, is secondary, in contrast with that of melancholia, although there may be easy transitions to the latter.

Imperative ideas frequently occur, with pronounced dysthymic accompanying manifestations, even with suicidal or hostile content with reference to others. Pressure in the head is very rarely wanting and almost regularly the patient has nosophobic ideas of brain softening or threatening insanity, which have a most disquieting effect upon his mind. Frequently there is asthenopia, and not infrequently cystospasm.

Spinal neurasthenia is, for the most part, the result of physical over-exertion, severe diseases, the puerperal state, sexual excesses, or emotional excitement. The patients tire easily, feel languid, complain of paralgias of the skin, muscles, or joints, and are quickly exhausted after slight effort; and thereafter, owing to the irradiation to vasomotor, secretory, and cardiac nerves, they have palpitation, outbursts of perspiration, and feelings of apprehension and oppression. The deep reflexes are increased. Sleep is disturbed by starts. There are often sensations of numbness, disturbed reaction of the muscles to the will, not infrequently paresthesias, and even circumscribed anesthesia. Spinal irritation is especially frequent, and, with the various other spinal functional disturbances, becomes the foundation for notions of spinal disease, which are often desperately obstinate.

Among the visceral neurasthenias, that of the heart is especially to be mentioned. It occurs in tainted individuals, or those that are already asthenic, as a result of emotional excitement, too warm baths, or excessive use of tobacco. The malady consists of attacks of disturbance of cardiac innervation, and symptoms during the intervals. The attacks consist of feelings of arrest of the heart, with paralgic pain and pressure and vibration in the cardiac region. Owing to irradiation to the vagus and glosso-pharyngeal, breathlessness, globus, etc., occur.

The patient believes his end to be near by apoplexy, and, becoming desperate, he renders his condition worse by this emotional influence. After a time, the condition passes off. The patient is tired, exhausted, remains emotional, unstable in his vasomotor functions, and predisposed to new attacks, disquieted in the extreme by ideas of heart disease, and sometimes the paralgic troubles in the cardiac region cause nosophobic ideas and depression.

Gastric neurasthenia consists, in part, in reaction to digestive processes which surpasses the physiologic norm (to be understood as a result of the abnormal increase of reflex excitability and irradiation of stimuli, especially as they affect the vasomotor nervous system); in part, in troubles independent of the process of digestion (gastralgia, pyrosis, ructus, occasional vomiting of water and mucus, feelings like globus, bulimia alternating with anorexia, constipation, slow pulse, disturbed sleep, emotional excitability, and depression).

The digestive troubles and reactions are dullness, pressure, cerebral congestion with feelings as if intoxicated, flashes before the eyes, roaring in the ears, nervous excitation, palpitation, alternating feelings of heat and cold, desire for sleep. Besides these there are special dyspeptic troubles (fullness in the region of the stomach, epigastric sensations, ructus, bloating sickness, pyrosis). One of my patients said: "I became conscious of the whole process of digestion." Naturally such patients eat as little as possible. This may result in inanition. Mental over-exertion and excitement while taking food, which is hastily chewed and not sufficiently digested, are important causes.

One of the most noteworthy forms is sexual neurasthenia. Its causes in men are sexual excesses, especially onanism; sexual abstinence with lively libido, which results not infrequently in so-called psychic onanism; sometimes chronic gonorrhea in the posterior portion of the urethra. Pollutions mark the beginning. They are the signs of increased impressionability of the ejaculatory center in the lumbar cord, whether this be primary (not due to sexual excesses) or secondary and dependent upon peripheral irritation (hyperesthesia of the urethra, prostate, and sacral plexus). At this stage (local genital neuroses) the irritable weakness of the center also shows itself in the form of premature ejaculation in coitus. This renders coitus impossible, and has a depressing effect upon self-confidence. The pollutions have a shock-like, injurious influence upon the central organ, and awaken in the patient fears of commencing disease of the spinal cord, the more since the symptoms of a neurosis of the lumbar cord become clearer and clearer. The result may be profound hypochondria and melancholia. Under the influence of these feelings and thoughts there is an inhibitory influence exerted upon the erection center (psychic impotence).

In the further course there is greater intensity of the irritable weakness of the center in the lumbar cord (neuroses of the lumbar cord). Stimuli of all kinds induce more frequent pollutions, which constantly increase the irritable weakness. The unusually intense libido awakens erections, but the irritable weakness of the center does not permit sufficient and enduring erection. Pollutions lead to more and more distinct spinal neurasthenia. This and the impotence have a very depressing effect, and induce thoughts of tabes and hypochondriac depression. Paralgias and neuralgias in the domain of the lumbo-sacral plexus complete the picture of spinal neurasthenia. Where there is predisposition, this develops into general neurasthenia, in which special accidental peculiarities may give rise to the cerebral, gastric, and other forms. Neurasthenia developed upon a sexual foundation is characterized by a shy, depressed character, reduced feeling of self-confidence, hypochondriac depression with fear of tabes, by lassitude, reduced muscle-tone, paleness associated with a good condition of general nutrition, intention-tremor, and tremor due to embarrassment, which may go to the degree of helplessness and ataxia in

movement as soon as the patient knows that he is under observation. Besides, there is tendency to dyspepsia, flatulence, and obstipation; great variations in the frequency of the pulse, which may reach 120 as a result of emotion or physical exertion; great instability of the vasomotor functions, which may go on occasionally during attacks to general vascular spasm with violent palpitation and paroxysmal distress and oppression in the cardiac region. There are also the symptoms of the peripheral, genital, and lumbar neuroses, with intensification of the general psychic troubles by renewed ejaculations.

Sexual neurasthenia in women presents a pathogenesis and symptoms analogous to those that occur in men. Here sexual excesses, especially psychic onanism, play no small part. As analogues of pollutions, there are lascivious dreams, which induce spastic contraction of the tubes and the uterus, with expulsion of secretions of the genital mucous membrane under lustful excitement. The shock-like effect of these processes is the same as that of pollution in the asthenic male. Besides functional and organic affections of the vagina, the uterus and ovaries are important etiologically; for they induce hyperesthesia (analagous to that of the urethra and prostate in the male).

Anatomically it depends upon the effect of tumors, infarcts, faults of position, or erosions, which through pressure, pulling, or denudation of nerves have an irritating effect (Hegar). Too, other organs supplied from the pudendo-sacral plexus may have a like effect (bladder troubles, rectal fissures, hemorrhoids). The stages are genital local neurosis, lumbar neurosis with spinal irritation never wanting, and general neurosis (neurasthenia, with mixture of symptoms of hysteria).

Not infrequently the disease dates back to the development of puberty (agenesis and congenital anomalies in the position of the uterus) or to the climacteric. At the time of the menses the neurotic troubles are always intensified. According to Hegar, the conditions which point to a neurosis of genital origin are: commencement of the disease with symptoms referable to the lumbar cord; occurrence of symptoms in domains which are principally in relation with the sexual sphere (stomach, throat, breast, larynx, thyroid, trigeminus); attacks of the disease beginning with aura-like symptoms in the path of the nerves of the lumbar and sacral plexuses, with exclusion of anomalies or diseases of other parts of the body that might be the source of the neurosis.

The treatment of these protean forms of neurasthenia must be principally psychic and directed to the causes. Therapeutic efforts must be directed against the irritable weakness by the use of tonics in the broadest sense of the word.

The diet must be rich, especially in proteids and fat. Stimulants in general are to be avoided. Among physical remedies the most important place is to be given to fresh air (sojourn in the mountains), hydrotherapy, rubbings, half-baths, river and sea bathing, and electricity (general faradization, electric baths). Among drugs indicated are iron, arsenic, strychnine, phosphorus, ergot, opium, zinc, cocaine, damiana, and quinine, in accordance with the indications of the individual case. Valuable sedatives from a symptomatic standpoint are the fluid extract of piscidia and the bromine salts. As hypnotics, paraldehyde comes first, and then amyl hydrate and sulphonal. Chloral hydrate should be used only occasionally. Where the nutrition is much reduced, as in certain forms of gastric neurasthenia, forced feeding (Playfair) is

indicated. Here the detailed treatment of single forms of neurasthenia cannot be considered.

The Psychoses Based upon a Neurasthenic Condition.

Neurasthenia, like the other general neuroses, forms a great predisposition for the origin of episodic psychoses or those that develop as terminal phenomena. These psychoses may be divided, with considerable distinctness, into two groups, one of which may be regarded as psychoneurotic, the other as degenerate.

Cases of the second group actually develop only upon the foundation of marked taint, of which chronic constitutional neurasthenia is a principal feature. The psychoneurotic group is made up of cases in which predisposition is slight or entirely wanting, and in which the neurasthenic condition is acquired, rather episodic, and in any event not constitutional. The psychoses of this group are in part transitory and in part prolonged. The protracted psychoses manifest themselves in the well-known forms of melancholia, stupidity, and confusional insanity, which have been described with the psychoneuroses. The majority of the cases of the last two disease-pictures are, at any rate, founded upon a benign, though neurasthenic, condition. Under degenerate neurasthenic disease-pictures we shall have to mention: Insanity with imperative conceptions and the clinically peculiar forms of paranoia developed upon the special foundation of neurasthenia. Cases of melancholic *folie raisonnante* also in greater part belong here.

Psychoneuroses on a Neurasthenic Basis.

1. Transitory Insanity.

This mental disturbance sometimes occurs at the height of cerebral neurasthenia as a culminating point of a state of cerebral exhaustion, which is accompanied also by external signs of inanition and exhaustion (tremor, subnormal temperature). For the most part, in such cases we have to deal with acquired and more or less acute cases of neurasthenia. The final cause of transitory insanity is sleepless nights, which induce the expenditure of the last vestiges of force. It quickly disappears with the restoration of sleep and improved nutrition.

Exhaustion of the psychic organ expresses itself in clouding of consciousness, which may go to the extent of loss of consciousness with corresponding defects of memory; in defects of the sensorial functions, which may reach the degree of want of apperception and loss of speech and motor ideas. Apprehension and single delirious

ideas occur in this temporary state of mental exhaustion, which may increase to stupor, and these ideas may lead to dreamy, insane acts. Thus, there are states of delirious, clouded consciousness and dream-like, stuporous conditions which correspond perfectly with those arising upon an epileptic foundation; but, with regard to prognosis, treatment, and the future condition of the patient, they must be sharply differentiated from the latter. With the disappearance of the cerebral exhaustion, usually as a result of sufficient sleep, lucidity, with correction of the false ideas, is quickly restored.

The pupils, which are usually dilated and react slowly, point to an anemic state of the brain as the cause of this transitory insanity. The possibility of cerebral anemia due to vasomotor spasm is suggested by the small pulse and wire-like contracted arteries. These conditions last not longer than a few days. There are preceding and following them clear signs of severe cerebral neurasthenia. Relapses are infrequent.

CASE 39.—Transitory neurasthenic insanity. Delirium with self-accusation.

In the night of November 17th to 18th, the police found A. (aged 19) in the street, naked and apparently disturbed mentally. When taken to the station, he ran wildly into the room and asked to be tied because he had stolen money and clothing from his superior.

When he was brought into the clinic of the Vienna General Hospital he seemed troubled, but his conduct was otherwise orderly, and there was no disturbance of association of ideas within the circle of his delusion. He repeated his self-accusations. He had stolen yesterday, had been immediately arrested and sentenced to fourteen months' imprisonment. In the hospital he believed himself in prison, and took the physician for an officer of the law who had conducted his trial the day before. He begged for lessening of the sentence, knew nothing of his having dropped the clothing in the street, but thought it was quite proper, since it had been stolen.

The patient is of medium size, thin, badly nourished; cranium and teeth rachitic. Circumference of the head, 56 centimeters. Skull not sensitive. Complained of pressure in the head. Cranial nerves and vegetative organs without anomaly. No fever. Peropodia on the left side.

At half-past 11 on the morning of the 18th the patient suddenly came to himself. He knew where he was, then recognized time, and the last anomaly to disappear was the delirium of self-accusation.

The patient is lastingly amnesic for the time between 7 o'clock of the evening before to his coming to himself in the clinic. He hears what is told him of what has taken place with an air of astonishment and cannot explain his deliria. He remembers indistinctly that, on the 17th, after dinner and at about 4 o'clock, he had gone into the city and taken something in a *café;* memory disappeared from this moment.

The patient came of a neuropathic mother, father was a drinker, and a sister suffers with cerebral infantile paralysis. Since childhood, the patient

has been nervous and excitable. From his fourteenth year, he suffered with ophthalmic migraine, during which he was slightly confused, and formerly he had peculiar ideas of being rich, but lately painful thoughts, which had actual foundation, but occurred only during the attack of migraine. He was also troubled by imperative ideas at the same time. The scotoma often lasted two or three hours, the attack itself even twelve hours. Such attacks occurred three or four times a year. For two years the patient had been employed in the office of a lawyer. He was not a drinker, not given to sexual excesses, and had always been intolerant of alcohol.

For a year, as a result of overwork in his employment, he had had cerebrasthenia, complaining evenings of great fatigue, diffuse headache, and difficulty of thought. He was sleepless, increasingly disgusted with work, and incapable. He complained that he must maintain an old mother and employ all his will-power. He was afraid for the future that he would become a beggar.

During the last six months there had been distress in the family, which weighed much upon him. The patient worked nevertheless nine hours a day in the office, and spent his time in the evening reading, usually until 3 o'clock in the morning. He was forced to rise tired and exhausted at 7 o'clock in the morning and resume his work. Of late, preceding the mental trouble there had been little sleep, and much pressure in the head with increasing irritability. When he went out on the evening of the 17th he had no migraine. On the way thoughts suddenly came to him that he was a criminal, which he was able to overcome easily by his consciousness of innocence.

At his desire, because he might lose his position, the patient was discharged on November 19th. At this time the patellar reflex was much increased, and there was left foot-clonus. On November 21st the patient returned to the police department because he again had imperative ideas of being a criminal, which troubled him. With antineurasthenic treatment and care for sleep these troubles disappeared.

2. Protracted Psychoneurotic Forms of Disease.

Following immediately upon the transitory states of exhaustion of the neurasthenic brain are to be considered the disease-pictures of stupidity (acute dementia) and confusional insanity, as most instances of the latter disease belong in this category. Manias developing in a neurasthenic brain are very infrequent. Apparently in such conditions the absence of nervous force is not sufficient for the development of maniacal states. Melancholias are much more frequent upon a neurasthenic basis. As an example of such melancholias, characterized more by inhibition than by psychic pain, is that due to onanism.

Melancholia Masturbatoria.

This develops upon the basis of a cerebral neurasthenia provoked by sexual neurasthenia. The stage of incubation corresponds with the picture of a psychoneurosis with dysthymia and never-failing nosophobic interpretation of head-pressure and ideational inhibition

(threatening insanity), of spinal irritation (tabes), or disturbed sexual function (incurable impotence). The condition develops slowly to the height of the psychosis, or acutely as a result of psychic shock (especially fright, knowledge of the results of the vice). Self-confidence is profoundly diminished. The patient thinks that he is recognized as one given to onanism and therefore despised. He feels in a painful way that he is the object of attention. As a result of olfactory hallucinations he thinks that he gives forth foul odors and is therefore avoided. The psychic pain is much less a spontaneous symptom than a reaction to the symptoms of mental inhibition. The patient is pathetic and theatric in the expression of his sufferings and his guilt. He poses less as a repentant sinner than as a martyr to a fatality, and this may be accompanied by religious ideas. In his outbreaks of despair there is frequently great irritability, which may extend to aggressive acts toward others.

Occasionally there are noticed, especially at night, attacks of apprehension due to cardiac neurasthenia and vasomotor angina pectoris, which may reach the degree of raptus melancholicus. Attempts at suicide in such patients are quite usual. They should always be expected. Not infrequently, apparently as a result of repentance, and partly with a thought to save themselves, mutilation of the genitals occurs. The impossibility of resisting the deep-rooted, though feared, impulse to onanism and the painful inhibition of volition and thought are not infrequently interpreted as evidence of being possessed by the devil, which may develop into true demonomania with corresponding delusions and hallucinations.

On the basis of profound degeneracy are observed, with remarkable frequency, uncleanliness, impulse to disgusting things, impulsive raptus, imperative ideas, and primordial delusions—usually of religious content (Messiah).

Episodic transformation to hallucinatory confusional insanity, owing to the neurasthenic foundation of these conditions, is not infrequent. The common features which indicate the special cause of the disease are shown in the personality, which is relaxed, mentally and physically broken, shy, with sentimentality and inclination to religion and mysticism; somatically, by the neurasthenic troubles, especially pressure in the head, spinal irritation, and the hallucinations of smell, which are rarely wanting. The prognosis is not unfavorable. Tonics, with opium, which here usually has an excellent effect, hydrotherapy, and care of the patient to prevent onanism are the principal indications in treatment. I have not noted any difference between the disease-picture as presented in men and women.

CASE 40.—Melancholia due to onanism.

Miss S., aged 23. Mother neuropathic. Mother's brother died in an insane asylum. One sister died in convulsions. Patient is said to have developed normally and to have presented nothing abnormal, except a choleric disposition. Puberty began at 14 without difficulty. The patient was talented, especially for music, was well educated, and had no severe disease until August, 1882. At that time neurasthenia developed (quick mental and physical exhaustion, complaints of pressure in the head, spinal irritation, bad and unrefreshing sleep). Patient lost her former gayety, lost weight, developed dyspeptic symptoms, became depressed, irritable, and often stared before her and expressed disgust with life. She neglected her appearance, showed lack of interest in employment, even leaving her music, which she formerly had cultivated passionately. In the course of the spring of 1883 the patient became more and more abulic and inactive, anemic, dominated by numerous paralgic sensations, hypochondriacally depressed, would not eat because nothing could pass through her alimentary tract, expressed the fear that she was suffering with cancer and would infect others, and therefore she kept more and more apart from her relatives. With this there was decided decrease of general nutrition and profound anemia.

In May, 1883, raptus-like attacks of apprehension occurred in which she attempted suicide by jumping into the water. When saved she expressed profound repentance, and thought that her sins could no longer be forgiven. She herself was the cause of her own misfortune, felt that she was losing her reason, could not think (head-pressure). She thought she would lose her reason and die of cancerous disease, the odor of which she perceived already. She bemoaned in a sentimental way her ruined life, her early death, asked that she be pitied, and that she be punished because she deserved it. Since she was constantly losing in physical strength and frequently refused food, and the raptus-like attacks of fear recurred, the patient was admitted to the clinic in the beginning of August, 1883.

On admission, the patient is pale, anemic, thin, with circles around the eyes, dirty color, with numerous abrasions on the face and hands due to scratching. The skull is regularly formed and there are no signs of degeneration. The vegetative functions are normal. Tired, exhausted, shy character; relaxed, bent attitude. The patient has numerous sensations and uncomfortable bodily feelings. She one day had felt that her spirit was going, and in her fear of not being able to live long she had sprung into the water. Her body feels like a stone stuffed full of food. Her body is quite destroyed; she can no longer think and feels that she is nothing; that she is full of lice which the nurses have fed her. She is as heavy as lead. She had destroyed herself by her sin (onanism) and was guilty of everything. With that, weeping, saying if she only had a husband! Asked to have her throat cut. She is already rotting and has been dead a long time. She does not understand how anyone could wish to make one who is dead still eat. She is a great sinner. There is nothing left for her to do but to be delivered to hell. The train in which she had traveled would be destroyed on her account, and also the whole city of Gratz. Visions of the devil, mistaking those around her for the devil. Anxious, apprehensive state of expectation with reference to the journey to hell. Episodically, painfully sentimental complicated states of feeling with recourse to religion, mistaking physicians for Christ and a fellow-patient for the Virgin Mary.

The patient is kept in bed, fed well, and treated with iron and quinine. Defective sleep is combated with paraldehyde. The neurasthenic, hypochondriac, melancholic disease-picture at times approaches that of hallucinatory confusion: incoherent delirium, exhaustion, numerous demoniac visions. Illusory mistaking of those around her for divine persons. Persecutory, denunciatory voices. Hallucinations of smell, of putrefaction, of decaying flesh, etc.

After a few weeks, with improvement of the general nutrition, the original picture of melancholia returned with predominating manifestations of inhibition and allegoric interpretation of them. The patient complains that she is absolutely foolish and does not know what she should do. She thinks herself at the end of the world. All is dead. She would prefer to be buried than eaten by the mice. She feels how she is already bitten by the worms (paralgias). She asked whether she would not finally be hacked to pieces and slaughtered. She says that she is guilty of everything.

In the course of October, decided improvement. The patient gains in weight, and her turgor vitalis and color return and she shows interest in the external world, asking for news of home. Episodically she is still a great sinner. She thinks herself too well cared for and belongs in hell. Continued improvement under rubbings with wet towels, strengthening diet, and tonic medication.

The middle of November the complaints of herself decrease. Sentimental, painful feelings concerning herself and the world take their place. The disease returns to its original phase of a hypochondriac neurasthenic neurosis: Complaints of mental confusion. Destroyed power to think. Empty head. Hypochondriac ideas of cancer and pyemic fever due to occasional hallucinations of smell and paralgias, especially of spinal irritation. Pressure in the head with complaints that the brain has disappeared. Gradually there is insight into the disease and return of former inclinations and occupations. At times exacerbations of the inhibition, depression, the paralgic, neurasthenic troubles, and renewed hallucinations of hearing which can always be referred to onanistic relapses. With hydrotherapy, iron, constant watching day and night, recovery gradually takes place. On March 1, 1884, the patient was discharged recovered. In the fall of 1886 I saw Miss S. on the occasion of a visit, and she was a bright, fresh young lady, physically and mentally.

3. Degenerate Forms of Disease upon a Neurasthenic Basis.

As striking types to be described here, there are peculiar forms of mental disturbance characterized by imperative ideas and disease-pictures of paranoia.

(a) Mental Disturbance Due to Imperative Ideas.[1]

In contrast with the elementary and episodic depression in tainted, neurotic, melancholic patients having imperative ideas (*comp.* page 63), here we have to deal with lasting and innumerable proc-

[1] Synonyms: abortive Verrücktheit, folie du doute avec délire du toucher, folie avec conscience, pseudomonomanie, impulsions intellectuelles, folie à idées imposées, délire emotif.

esses which attack the personality, and in all directions of the mental life have partly an inhibitory, partly a disturbing and compelling effect, which moreover present a peculiar course, and thus have the significance of a special and very characteristic disease-picture. The effect upon thought is inhibitory; upon feeling, disturbing, and to such a degree as to induce despair; on the psychomotor side there are impulses to act in the sense of the concrete imperative idea, or to hinder intended acts.

This insanity of imperative idea rests upon a neurotic foundation. As a rule, this can be shown to be neurasthenia—*i.e.*, constitutional and due to heredity; and upon this foundation there may develop an hysteropathic or hypochondriac picture as an accompanying neurosis of the process of imperative ideas. It is only in rare cases that the neurasthenia, either with or without pronounced hysteria or hypochondriac symptoms, is acquired (as a result of mental overexertion, emotions, severe exhausting diseases following quickly upon confinement, lactation, sexual excesses, especially onanism, etc.), and the malady under certain circumstances is temporary. Causes which excite the outbreak of the disease or relapses are the weakening influences already mentioned.

In cases which develop on the basis of hereditary taint, even physiologic phases of life (puberty, climacteric) suffice to induce the disease; indeed, not infrequently it occurs in childhood, like cases of original paranoia.

That the malady runs its course upon a neurasthenic foundation is shown by the fact that the immediate causes of the outbreak are influences which reduce the cerebral tone; for example, emotions, loss of blood (menses), indispositions, debauches, and the like; that relapses and exacerbations of the disease go hand in hand with those of the fundamental accompanying neurosis, while, on the other hand, successful treatment of the nervous weakness improves the mental disease.

The disease occurs with quite the same frequency in both sexes. The imperative ideas of the disease-picture under consideration have many things in common and many analogies with the primordial delusions of paranoia, in that they are primary and devoid of any affective foundation, even though maintained or intensified by emotions; that they develop out of the depth of unconscious mental life and have a surprising, disturbing, and strange effect upon the conscious, logical content of thought, with which they stand in contrast and over which they exercise a compelling force. A fundamental difference, however, consists in this: that the primordial delusions of paranoia are quickly accepted, assimilated, and elaborated into a system of delusions, while the imperative ideas, at least as a rule, are always regarded as abnormal and looked upon as unassimilable disturbing invaders. With reference to the course, there are, on the other hand, again, some analogies in that the insanity of imperative ideas has this in common with paranoia: that these genuinely constitutional, persistent, and, on the whole, stationary states do not progress to pronounced conditions of psychic weakness.

On the psychic side in these cases there is no stage of incubation. In the midst of perfect mental health the patients are overcome by

thoughts that are irrelevant and without any immediate relation to any affect, but which remain in consciousness with abnormal intensity and duration, in spite of every effort of the will and thought, until they disappear spontaneously. The patient then has peace, or a new fixed, distressing circle of ideas takes the place of those that have disappeared. This is the more to be feared because the reactional, emotional state induced by the imperative ideas reduces the activity of the will and ideational association, and especially because the excessive mental work due to the attack increases still more, temporarily, the state of neurasthenia and irritable weakness.

The immediate cause of the occurrence of concrete imperative ideas is only exceptionally demonstrable. They may arise psychologically through association of ideas excited by a sensory perception; as a result of some astounding event or some word in reading, in prayers, or in conversation; and under some circumstances as a result of contrast of ideas. As a rule, the manner of origin is probably physiologic and organic, much as is the case with primordial delusions; and under such circumstances the *primum movens* in the development of the imperative idea is difficult to discover. In some cases a connection with erotic, lascivious ideas at the time of the menstrual processes, or sexual excitement, may be proved; or a connection of a destructive imperative idea with disturbances of bodily sensation may be traced,—as, for example, a neuralgia, with which in its nascent state the imperative idea becomes connected. The content of imperative ideas is extremely varied, corresponding with the mental development in general and the peculiarities of the individual that presents them. It is plain that original anomalies of the character favor the occurrence of this or that order of imperative ideas; as, for example, religious thoughts in bigots; thoughts of uncleanness in those that are hysteric or hypochondriac; thoughts about everything being properly cared for, whether everything is in its proper place, in persons who have been remarkable for their pedantry and troublesome sense of order. On the other hand, the typic correspondence in the content of these ideas, as well as the order in which they develop in individuals of different positions in life, of different sex, and of various degrees of education, like the typic primordial delusions of original paranoia, is astounding.

We are justified in separating as a distinct disease-picture in this group cases in which there is at first the impulse constantly to think, usually of religious and metaphysical matters, and in which later the imperative idea of being soiled by metals, animals, and the like, occurs (folie du doute avec délire du toucher—Legrand du Saulle).

These imperative ideas are the most frequent. The religious content is made up of questions like these: What is God? Is there a God? How was Eternity created? Why is there a devil? Is there an actual devil? Is there such a thing as Eternity? Is there a Providence? How can the idea of three beings in one person be reconciled? The metaphysical problems are similar: How did man arise? What was the origin of the world?

Many patients are forced to continually occupy themselves with mathematic questions, and to carry out the hardest mental problems, until they are exhausted. In other cases each sensory perception is associated with the question of the why and wherefore of the phenomenon; or what would happen if the patient, for example, at the sight of a knife, should cut his own or his friends' throats; or if, on the bank of a stream, he should push some one into the water. Whether, in the first case, death would occur immediately, and how. By hemorrhage? In the second case, whether the person would be able to save himself by swimming. Or there may be harmless imperative ideas, such as whether the ladies met are beautiful or ugly, single or married.

Others, in their everyday occupation, are constantly occupied with the thought of whether they do their duties properly; whether a letter, for example, was correctly and clearly written; whether there were any faults of spelling in it, or blots; whether the address was properly written; whether the letter had not stuck in the letter-box; whether a sum of money was correctly counted, a bill correctly made out, the doors actually shut, the lights extinguished, or a thief had not stolen in.

With these, there are the painful imperative ideas and scruples as to whether this or that act or neglect might not be injurious to the patient's health or to the health of others. The thought that with a match, a pin, a splinter of glass, a spot of ink, the health and life of another has been affected tortures such a patient, whose fancy paints the most absurd results of his hypothetic carelessness. On a bridge the thought comes of having pushed some one into the water, and he has to look to determine whether some passer has not fallen into the water. The situation may become intensified to the torturing imperative idea of having murder on the conscience.

In the attempt to pray the opposite idea comes up: cursed instead of blessed; hell instead of Heaven; wild sow instead of Our Lady; and this happens at every attempt to repeat the same passage of the prayer. After having been to confession the patient is martyred by the thought of having forgotten sins, and, after communion, of having taken communion unworthily; of having allowed a part of the Host to fall on the ground. After having given testimony in court the imperative idea comes of having given incorrect testimony and of having committed perjury. In social intercourse there is the thought of having said or done something compromising; in business, of having lost compromising papers. In shops such patients are troubled with the idea of having hidden objects in their clothes, or of accidentally having carried off objects in their garments. In the street there is the imperative idea of being forced to blush, and thus to appear ridiculous; of having caused a lamplighter to fall from his ladder. The patients are forced to stand for hours to see whether a child is to be run over; whether a man working on the roof does not fall; whether a bridge does not give way; or whether all the passers have the luck to get over. In the further course of the disease there frequently develop imperative ideas of uncleanliness arising from dirt

and poison. The sight of cats and dogs awakens the idea of the poison of rabies; the sight of copper vessels or metallic door-bells the idea of verdigris. The patient is poisoned, and poisons are communicated to the family; all are poisoned, etc.

The imperative ideas are not always absurd; they may be concerned with actually possible experiences, philosophic problems, mathematic questions, etc. Thus one of my patients was forced for months at a time to keep thinking about whether his fortune, which was invested in State bonds, was actually secure. Under all circumstances we are immediately struck by the inability of such patients to bring these thoughts to an end; by the forced impulsion with which they constantly recur, in spite of the fact that the patient understands the improbability, or even the impossibility, of his fears.

The formal disturbance of ideas, as presented in imperative conceptions, exerts its influence upon the other mental functions. In thought it inhibits the free play of association, and prevents the occurrence of ideas that are quieting or justified.

The influence upon action and feeling is especially important. In spite of perfect lucidity, in spite of comprehension of the abnormality of the process and the uselessness and painfulness of the imperative thinking, the patient is constantly forced to think, to ask questions, to go over events, to reassure himself, to call up events again, to weigh possibilities, to search for the proper word in prayer, etc., but all in vain. In time the impulse to act in accordance with the impulsion or to commit acts, becomes associated with the imperative conception.

The patient is forced to shield himself and others from dangers, to smooth the wrinkles out of the carpets, to take the stones out of the street so that no one can sprain his ankle. To his horror, he is impelled by destructive imperative ideas to kill himself or others, to commit some crime, to shout a curse, to bite the Host, to spit it out, etc.; to accuse himself before the court as a perjurer or murderer; or in a harmless way he is forced constantly to put things in order and place things where they belong; to change his thought, to wash himself constantly, or to remove supposed dust or poison from his clothing. Thus the patient loses much time and gradually becomes incapable of carrying on his employment. He now is no longer able to touch the handles of doors or metal vessels, or to visit the church or the theater, because he may commit a sin, compromise himself. He no longer dares to go out in the street, or cross bridges, because he fears to do others harm; or because he wishes to avoid the sight of the streets or objects which might awaken his terrible imperative ideas.

At the beginning it is still possible for him to go about by avoiding streets where there are no people, to go out at night, to run across bridges, etc.

The reactionary effect of the imperative ideas upon the emotional life of the patient is especially important. The result is violent reactive apprehension, which may go to the extent of outbreaks

of despair and nervous crises (contracted pulse, tremor, palpitation, fainting).

The apprehension is explained by the painful state of psychic strain which the imperative idea engenders, by the feeling of powerlessness to overcome the impulse, and by its painful content, when it is sacrilegious, immoral, or criminal; to this is added the fear that, with diminishing power of resistance, the impulse connected with the imperative idea may lead to the commission of some act that is silly, compromising, sacrilegious, or criminal; and finally the fear is intensified by the danger of letting others notice this painful state, and the feeling that the whole thing will end in insanity.

If the patient is able to yield to his imperative ideas, or to satisfy some impulse which would find expression in harmless acts, or to weep, then, as a result of the motor or secretory reaction, the painful crisis is quickly over and the patient soon experiences decided relief.

The general course of the malady is characterized by remissions and exacerbations. Intermissions lasting many years are not infrequent. The attacks of the disease occur suddenly and disappear in the same way. After a series of numerous paroxysms there is usually a longer pause of rest and recuperation. The accompanying somatic symptoms of the disease are those that belong to the fundamental neurosis. As in the neuroses in general, in this trouble there are spontaneous attacks of anxiety, and epileptic phenomena are not infrequent.

Melancholia may occur episodically. I have observed one case of the insanity of imperative ideas complicated by periodic melancholia. Temporarily the critical power of the patient, with reference to his imperative ideas, may be in abeyance, and they may then present the character of delusions. The terminations of the disease are recovery and states of mental torpor. In acquired non-constitutional cases I have repeatedly seen recovery, but in others, never, though I have in the latter observed intermissions lasting years. In reality these patients remain capable of intellectual work, but their inquiring disposition, their desire to have everything done exactly and to verify every act, do not allow them to perform the ordinary duties of life. Their timidity in the presence of things or surroundings which would tend to excite their imperative conceptions keeps them from leaving the house or occupying themselves with ordinary affairs. A disconsolate inactivity and weakness of will and imitative force render life bitter and unbearable for such patients. Their constant brooding makes them inaccessible to beneficial diversions, and pro-

duces thereby the most favorable condition for the constant return of their imperative ideas.

The terminal conditions of mental torpor must not be confounded with dementia. Termination in dementia has never yet been observed.[1]

The following points may be mentioned, explaining functionally this interesting mental disturbance:—

1. An abnormally intensified impressionability of the ideational mental life, with immediate establishment of relation between the perception or memory and the ego (as in paranoia), with extremely lively emotional coloring of the idea.

2. Intensified activity of the imagination, which allows the most distant ideational possibilities to develop out of the concrete imperative idea, and which, on account of connection with widely separated circles of ideas and situations, constantly excites the imperative conception.[2]

3. The energy of thought and will (activity of the forebrain) in opposing the imperative ideas by voluntarily calling up contrary conceptions in these neuropaths is profoundly reduced (irritable weakness).

The treatment of this malady must consider, in the first place, the neurotic, neurasthenic, physical foundation. The most important thing is to strengthen the nervous system by cold water and climatic cures, sea-bathing, general faradization, and by the use of tonics (iron, quinine, ergotine, arsenic); and these measures even in profoundly constitutional cases produce temporary results.

For this state of mental suffering the most important beneficial influences are found in society, travel, distractions, and occupation, in accord with the patient's taste, which must not be too taxing upon the feelings nor too much of a strain mentally and physically. The abnormal impressionability of the psychic organ may also be reduced by bromides (from 4 to 6 grams), as well as by amyl hydrate in prolonged administration. These often prevent or at least modify and make more bearable the paroxysms, especially those which occur at the time of the menses. During the attacks large doses of bromides (from 6 to 10 grams), injections of morphine, chloral hydrate, alcohol, and especially the comforting encouragement of friends, and

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[1] Berger observed absolute integrity of intelligence in one patient after twenty years, and Kelp after thirty-eight years.

[2] For example, a patient of Sander was troubled with the imperative idea, at the sight of any man, that she had been intimate with him; a patient of Berger, who had the imperative idea at the sight of boxes that there was poison in them, and that they would bring harm to some one, and that she herself was guilty.

assurances about the actual facts from some person in the patient's confidence have an especially quieting influence.

CASE 41.—Insanity due to imperative ideas.

Mr. V. C., banker, aged 52; father was nervous, sickly; mother weak nervously. He says that he has always been of nervous constitution, always very irritable, sensitive, impressionable, as were all his brothers and sisters. At the age of 17 he lost his parents, and at the age of 18 he took upon himself a large business and the care of his brothers and sisters. Of great rectitude and rare conscientiousness to the extent of extreme scruple and pedantry, he amassed a great fortune, and gained the highest respect of the community. He lived very moderately, but was, however, an inveterate smoker. He never acquired lues, and since his twenty-seventh year he had lived in happy marriage, though he was under extreme strain and very active until 1880. With the exception of slight indications of cerebrasthenia, he had always been well.

In the beginning of 1880, after business strain and violent excitement, he became cerebrasthenic (sleeplessness, pressure in the head, difficulty in thinking, loss of appetite, emotionality). In August, 1880, he had two epileptiform attacks near together, with convulsions especially on the right side of the body. At that time he lay some days in coma with right-sided hemiplegia, but he recovered and thereafter presented no symptoms of organic brain disease. Toward the end of 1880 his brother died. His cerebrasthenia increased.

The patient continued his business strain and remained capable of work until the beginning of 1884. At that time, one day as he was looking over an account the thought struck him that the account was not correct and that he had made a mistake to the disadvantage of a customer. He was forced to go over the account again and again, but could not find any satisfaction. Then the thought came that former accounts were incorrect. This thought left him no rest, and he was forced to go over his books and accounts of the last thirty years. The patient thinks himself that this immense mental strain has quite finished him. He put no more trust in himself to work alone, for fear of making errors in accounts and injuring others. With that there was the fear that he might compromise himself in writing or speaking, as a result of which he could scarcely bring himself to write or speak. Whenever he saw a bit of paper he had the painful thought that it had some relation to him. He became restless, constantly troubled with doubts as to whether he took proper care of his business, or whether he wrote addresses and letters correctly, counted money correctly, or had written his accounts as they should be. Finally, he had no trust in himself except in the presence of other persons who could verify what he did, his acts, and his affairs. When he prayed he was no longer satisfied with verbal absolution; it had to be written. This otherwise painful situation was rendered desperate when, after a few months, the idea arose that he might harm others. This threw him into violent excitement and attacks of anxiety, so that he could no longer see his children; and he thought that every spot or bit of dust or a bit of glass or a needle was a poison which might cause harm to others. His fear forced him to wash the whole day, to examine his clothes and other things, and to undress himself frequently in order to hunt for needles, slivers, etc. Finally he had no rest at all unless his wife *(pro forma)* did the same thing. Hours and days at a time this unfortunate patient had no respite from his imperative thinking. At times he

was quiet, comforted, and had full insight into his disease. On June 6, 1885, the patient was brought to me by his relatives.

The patient is of middle size, of powerful build, but much reduced in general health. The vegetative organs are normal. The most careful examination shows no sign of organic brain disease. Signs of degeneration are not present. There are no evidences of mental weakness or melancholia. The patient gives a clear *résumé* of his disease up to the present time, and at times is completely master of his imperative ideas, and calls attention to the fact that his scrupulosity is painful to him, as well as his association of ideas, which brings into his mind the most distant possibilities. He understands that it is disease, but he cannot overcome it. He is under the domination of an impulse which he cannot overcome. When he tries to do this, he is terribly distressed and becomes excited. He is tortured from morning till night. His depression is only reactionary. "Doubt concerning no matter what, the fear of causing injury to another by no matter what means: that is the nucleus of my disease."

Physically I discovered signs of cerebrasthenia (pressure in the head, unrefreshing sleep, complaint of general fatigue, lassitude, and great emotionality).

The patient complains that he is in constant anxiety and restless while speaking, for fear of saying some untruth or of compromising others. While eating he is forced to examine his food in order to find out whether there are any pieces of glass or needles in it. This fear came upon him some months before when at table he saw a broken glass. He is not concerned about his life, only about the lives of others. When he sees a funeral procession he fears that he was responsible for the death of the individual. When walking he is troubled by the idea that he may sow needles and glass splinters and poison about and thus injure others; and for this reason he cannot be alone a moment, and must be constantly assured that he is deceiving himself. His own judgment and evidence of his senses are worth nothing to him. To his excited imagination every spot, kernel, bit of dust or thread seems to him to be something dangerous. A short time before on a journey from the East to his home in Europe he had had a small bottle of medicine in his hands and emptied it. Suddenly the fear came to him that it was poison and that he had unconsciously got it on his person. From this time on there was fear of poisoning and touching, constant impulse to wash, and need to be enlightened by pharmacists and physicians about poison, and to be reassured about the contents of the bottle. On the journey to Europe he was troubled by the thought that at home he had killed everybody by this supposed poison. He was almost in despair.

In spite of all his washing, he still feared to injure others present by the poison on his hands. Every spot on the furniture or on his clothing seemed to him to be poison. A short time ago, as he was passing by the window of a subterranean passage in a railway station, he threw in a piece of one of his finger-nails. Immediately the thought came to him that the nail was poison and would be dangerous for the people passing through the passage. He looked down for an hour through the window, fearing misfortune, and it was only with great difficulty that those with him could drag him away. These thoughts of poisoning were fed by the fact that the patient found some metallic shining dust, probably from a lead-pencil, in one of his waistcoat pockets.

This was clearly metal. While eating salad, he had gotten vinegar on his hands, and since he had had the metal between his fingers, naturally this produced soluble metallic salts. In this way he spread death and destruction around him.

It is difficult by persuasion and written assurance of experts to quiet the patient. He is also tortured by the idea of spreading an animal poison about with his toothpick (from the bits of meat sticking to it having undergone decomposition). The patient examines the glasses anxiously during meals, to be sure that a bit of glass has not fallen off and into the food.

A short time ago he saw in the swimming bath a boy go under the water near by. Immediately he feared that he had walked on this boy and rendered him unconscious, and that the boy was drowned. The patient begs that the basin be emptied, fears being accused of committing homicide by accident, and is inconsolable.

The patient's friends are sorely tried by him. He demands that he be watched constantly, that his clothes and pockets be examined, and that the floor and furniture be searched for poisons, needles, and bits of glass. He is occupied continually with scruples and cares, and demands explanations and reassurance. Scarcely is this accomplished when his questions, doubts, thoughts, and washings begin again.

The treatment consists in combating the neurasthenia with half-baths, rubbing, and electric massage. The aqueous extract of opium up to 0.5 gram a day in connection with quinine is tried for the psychic hyperesthesia. In severe nervous crises the bromides are found useful. Moral treatment by patient reassurance, careful explanations, methodic distraction, and strict observance of a plan for the day is the most important.

The patient becomes quieter, freer, and is able to employ himself. Now and then there are new doubts; for example, in writing letters, that there is sulphuric or nitric acid in the ink which in contact with the steel pens might give rise to substances injurious to persons to whom the letters are addressed, and thus his letters would be dangerous. On another occasion he thought he had lost a needle in bed. Clearly the needle had become imbedded in the mattress. Some innocent guest would be in danger of this supposed needle, which might penetrate his neck and cause his death. The patient exhausts himself in such possibilities and fears and constantly asks the physician how death occurs, etc. In the course of August neurasthenic symptoms pass away. The patient is able to control his ideas more and more, and the simple reassurance that it is nothing, or that it is nonsense, is sufficient to calm him. Finally he trusts himself alone in a room.

Homesickness makes it necessary to discharge the patient in October. For a long time at home he did well, and then the painful state of this pitiable patient returned. Apoplexy brought his disease to an end.

(b) Neurasthenic Paranoia.

This clinical form of paranoia differs from the typic form in that the delusions of the patient are nothing less than a false, illogical interpretation of sensations and feelings belonging to the neurasthenic neurosis, by a consciousness that has become altered in the sense of paranoia. The patient interprets these as due to influences

from without, and considers the pressure in his head as the efforts of enemies to benumb him by means of poisonous emanations; his disturbed thought as the result of machination of enemies, who wish to destroy his reason and send him to an asylum. His dyspeptic sufferings are the results of attempts to poison him. His numerous sensory symptoms (spinal irritation, paralgias, muscular and cutaneous hyperesthesias) are interpreted in a physico-chemic sense. Thus, he is robbed of his vital power, and he is weak, miserable, etc.

The further elaboration of the delusional system is helped by errors of the senses, as in other forms of paranoia. The clinical content is specially rich when the point of departure of the neurosis is in the sexual nervous system, whether as a result of abuse, especially onanism, or as a result of abstinence with intense libido (see page 187), and also in women as the result of irritative genital diseases, which lead to sexual neurasthenia ("lumbar neurosis").

In this same manner, also, many cases of paranoia develop during the climacteric. When the basis is sexual neurasthenia, and it occurs in the female sex, manifestations of an hysteric neurosis are seldom wanting; and these likewise offer material for the elaboration of the paranoiac system of delusions. Thus there are clinical transitions to the related form of hysteric paranoia. The pure neurasthenic form develops always out of a preceding neurotic state, with marked nosophobic coloring, which passes directly into delusions of observation and persecution.

The most striking picture upon a neurasthenic basis is that which develops out of sexual neurasthenia. It is practically almost the same thing as paranoia masturbatoria.

Paranoia (Sexualis) Masturbatoria.

The stage of incubation presents symptoms of neurasthenia sexualis which become general. The nosophobic ideas are about threatened tabes, insanity, and brain softening. In its course delusions of physical persecution, hallucinations of smell, and attacks of apprehension are characteristic.

The beginning of paranoia masturbatoria is usually unnoticed. The mental uncertainty in social intercourse, and the painful feeling that everyone sees in the patient his secret vice, which is peculiar to onanists, aid in the outbreak of the disease. The patient feels and believes that he is actually watched, observed, and soon also looked at askance and persecuted. Everything has a relation to himself: the conversation, manner of people, as well as the newspapers and advertisements, contain evil allusions and insults. With this the psychic

uncertainty and mistrust increase. Auditory and visual illusions offer further food to the developing delusion. Not infrequently, even at the beginning, hallucinations of smell of a disagreeable kind are interpreted as indicating that the patient gives forth a foul odor, and that he is regarded as being afflicted with a terrible disease; and thus he explains the supposed aversion of people, their disgusted manner, etc.

After months or years of incubation the height of the disease is reached gradually or suddenly. It is essentially voices of a persecutory character which induce it. The patient hears voices: He is a nasty fellow; he must be put out of the world; a society has sworn to put him out of the way. The delusions of persecution have abundant nourishment in the numerous neurasthenic sensations of the patient. Dyspeptic symptoms after eating are taken to be the result of efforts at poisoning; feelings of mental inhibition the patient interprets as the efforts of enemies to rob him of his reason and send him to an asylum. Feelings of dullness and head-pressure, due to vasomotor disturbance, are similarly interpreted, or are regarded, in connection with hallucinations of smell (chloroform, prussic acid, etc.), as the result of hostile design. He thinks there is an effort made to render him unconscious in order to rob him or look through his effects, or to put compromising things among them, etc.

The neuralgic-paralgic sensations are especially important as eccentric symptoms of the functional overstimulation of the sensory spinal paths due to onanism. The hyperesthesia in time affects also the sensory and sensorial territories. Every sensation now awakes a corresponding delirious idea, and every thought arouses a corresponding sensation. The hyperesthetic sense-organs are inclined to hallucination at the slightest stimulus. The illogical interpretation of the patient finds rich material in the anomalies of sensation in the skin, the muscles, or in general sensibility. Feelings of weight, of stiffness, of lightness, of being light enough to fly, of emptiness or of heaviness of organs, of separation of the soul from the body, of magnetic streams, occur and induce motor reflexes which may go to the degree of local and general spasm (catatonia), and they force the patient to seek for explanations.

The uniformity with which these anomalies of sensation are interpreted is astonishing. In educated patients they think themselves influenced by means of secret magnetic and electric machines worked by enemies. Uneducated patients interpret them as persecution with "sympathy," witchcraft, poisonous emanations, or as the result of having poison thrown over them, etc.

Not infrequently local neuroses of the genitals are interpreted in this sense (irritable testis, hyperæsthesia urethræ, neuralgia spermatica). The enemy practices onanism with the patient, causes pollutions, etc.

The disease is subject to remissions and exacerbations, the latter usually associated with renewed onanistic excesses, and occurring with increased hallucinations, sensations, and increased spinal reflex excitability, which may go to the degree of tonic and clonic, or cataleptiform or epileptiform attacks, due to reflex action upon the vasomotor areas. The further course is like that in the other forms of typic acquired paranoia.

Not infrequently there is transformation to delusions of grandeur. States of mental weakness occur earlier and are more pronounced in paranoia upon this basis than in the other etiologic varieties of the disease. The manifestations of neurasthenia and spinal irritation are amenable to tonic treatment (hydrotherapy, etc.). Morphine and bromides reduce the hyperesthesias, paralgias, and hallucinations, and, at any rate, are not without value symptomatically.

CASE 42.—Paranoia masturbatoria.

D., engineer, aged 38, single; parents tuberculous. One sister is neuropathic, another is insane. Patient was an onanist from his early youth until the age of thirty-six, though he was healthy and industrious in his calling. At that age he began to be ailing: losing flesh, suspicion of lung trouble, neurasthenic symptoms. A climatic cure improved his condition very much. Soon after returning to his occupation neurasthenic troubles became more frequent, with neuralgia testis and gastric trouble with obstinate vomiting. The patient became profoundly hypochondriac, thought himself impotent, and made self-accusations on account of his onanism. He had doubts of his recovery, and became shy and irritable.

In the further course numerous sensations make their appearance. He feels an electric fire in his body. From his left foot a current enters his body. His bed is insulated. He feels that his body is divided into two halves. When he gets out of a carriage he has the feeling as if his body had been left behind in an airy state. With this there is pressure in the head, buzzing in the ears, and persistent sleeplessness. Once he hears a voice: "I have made you electrically positive and negative." When on a business trip he suddenly has a feeling as if the food has slipped out of his mouth into his left foot. At night he hears a voice, "How would you like to die," and believes that his last hour has come. His dead parents and family physician appear to him. Another time, on going to bed, he sees around him unknown forms in a red haze. He hears imperative voices which say to him he must pray and go to the pharmacy and get musk. Lying on the sofa, he hears it said that it is a dissecting table. In the street he is called hypocrite, liar, etc. In bed at night he often has the feeling as if his hands and feet were burned and his

penis pulled out. He feels as if he were being dissected and tissue being pulled out of his body, as if objects were being pushed into various parts of his body, or as if his bones were being torn out. He feels that he is magnetized and his head metallic.

Increasing excitement as a result of these dreadful and numerous errors of the senses, after two years' duration of the disease, made it necessary to place him in an insane asylum. The trouble continued to progress. He is magnetized, electrified, no longer has any intestines. The physicians make electric streaks on his abdomen. He feels an elephant's trunk on his back. Food falls into the scrotum. A chain is sawing him. He is being bored in the navel. Pointed bodies are being driven into him on all sides. The bed sways. Machines and knives are stuck into his abdomen. He has a mass of iron angles in his abdomen, and teeth have penetrated it.

At the same time the patient is subject to numerous hallucinations of hearing. At the window he hears the cocks crowing. He hears that he is incurable and will be dissected; that he is the Wandering Jew and has shot the attending physician's wife. The bells and flies speak to him. His own thoughts and obscenities are spoken to him. He is called a bloodhound, and in the stroke of the bell he hears his own name. The final syllable *Vieh* (beast) is attached to all his words. He receives command to box the ears of all those around him. The clock tells him that he is a bankrupt. Everywhere he hears words of contempt; such words come to him from the sun. Clearly telegraphic influences are in play. He hears human excrement fall from the ceiling.

In the course of the disease there are hallucinations of sight. He sees everything in spirit, even the inside of his body. He sees his name in the air. Everything in the room is transparent. He sees the butterflies in a collection fly away before his eyes. When he tries to read, the letters fly out of the window. Frequently the visions also have an obscene character. He sees genitals flying about and obscene pictures on the walls. In his coffee on one occasion he saw a beautiful girl who beckoned to him.

The hallucinations of taste and smell are of subordinate significance. At times he has a metallic taste in his mouth, especially when he feels in it magnetic currents. Now and then the food has a poisonous taste, and he smells persons that have been executed.

The patient practices onanism very excessively. After frequent onanistic excesses his sensory excitability is so intense that he has visions whenever he closes his eyelids. One day in a court a coat was being dusted. He suddenly felt that he was thought of, and immediately that he was being whipped and that the blows hurt him. At the time of great excesses, disturbances of general sensibility and the delusion of electro-magnetism are livelier and come into the foreground. He then feels the drawing and repulsion of positive and negative electricity, as if he were touched with magnetic wires. He is read through and has the feeling as if he were cut with a knife. Lungs, brain, and memory are in a telegraphic way removed from him and from the asylum and sold to others. These abnormal feelings and perceptions are, in part, laid to those around him and lead to acts of violence; in part, without any reflection. In time the intensity of the reaction diminishes, and they become, in a measure, less frequent. The general course of this brain disease, manifesting itself essentially in hallucinations, was over twelve years. Up to his latest years he was given to onanism, and died of pulmonary tuberculosis.

CASE 43.—Paranoia upon the foundation of sexual neurasthenia in the climacteric.

Mrs. W., aged 50, admitted September 8, 1880. Her ancestry is unknown. Always neuropathic, irritable, impossible, peculiar. Separated from her husband seventeen years. At the time of the menses always depressed and troubled with migraine. Mother of four children. The climacteric began in the summer of 1879 (profuse, irregular menses; frequent cerebral congestion; increased irritability; more frequent attacks of migraine; troublesome drawing in the back and legs, and cold chills over the body). In the course of the winter of 1879 and 1880 she complained of spinal irritation, pressure in the head, and felt dull, restless, and did not like to leave the house. In February, 1880, she became suspicious, felt that she was watched and observed, and thought the police were after her. She thought that her son, who wished to make a marriage against his mother's will, with the young lady was making attempts against her life. Dyspeptic troubles, pressure in the head, and headache after meals she interpreted as attempts to poison her. She thought she smelled the poison. This made her weak and gave her fever. Her tongue was as if covered with white lead. Calomel was put in mineral water, which regularly gave her diarrhea and meteorism. Since she could not bear it any longer, she went from Gratz to Vienna and Salzburg, but found rest nowhere. Wherever she went she was the object of observation. At times she perceived a suffocating odor of cannel. Her abdomen had been made to swell up with water containing hydrosulphuric acid, and her food was poisoned with arsenic.

Of late the patient was threatening and hostile to those around her, and this had necessitated her commitment. Neuropathic habitus. The left side of her face is less developed than the right. Ears abnormally large. Dorsal vertebra sensitive to pressure. Vegetative organs normal. Examination of the uterus was not permitted.

The patient is constantly suspicious and irritated. She will not stay in bed because the iron bedstead and the pillow she suspects of conducting electricity and giving her headache and vertigo. Here the patient believes that she is persecuted with spirits and electricity, and she writes many protests on account of her commitment, and asks the court to release her. Her enemies (son and the young lady) have corrupted the Professor of Physics. The latter exercises constantly upon her influences by means of sunglasses and machines. She is the "medium" for the whole city of Gratz. She is watched through tubes. She feels this in both ears. They give her a whirlwind in her brain, and thus all her thoughts are divulged. Her head is squeezed in a vise, and her blood is forced here and there. The nerves of her head are stimulated so that she has to bend her head back. This is done, in part, with a concave mirror which induces the distant effect of magnetism, and, in part, by an invisible glass bell which is above her head. With the exception of her bladder, there is no part of her body that is protected from the distant effects of spiritualism.

The vertex is the seat of a burning, turning sensation. The glabella is at times bored, her ears pulled, and the occiput pressed. The temples are taken in a vise, and the cheeks alternately filled with blood; the eyelids pulled up to the brow by nerves. The tongue is affected with poison, and the nose with disgusting odors. Breathing is interfered with by pressing, drawing

feelings in the chest, and the heart's action is made irregular. She is caused to be constipated or to have diarrhea. Her persecutors keep her in permanent excitement. She refuses quieting medicines, taking them to be poison. The condition remains stationary, and since she was not amenable to any treatment she was given over to a hospital for the chronic insane.

CHAPTER II.

Epileptic Insanity.

Clinical Limitations of the Epileptic Neurosis. Epileptic Character and Elementary Mental Disturbances of Epileptics.

The clinical notion of epilepsy has undergone considerable expansion since the days of Hippocrates. To-day nervous pathology is acquainted with the fact that, in place of the general tonic and clonic convulsion with loss of consciousness, there may be nervous attacks, which at first sight seem to have little or nothing in common with the classic epileptic attack, but which, nevertheless, must be recognized as signs quite as characteristic of epilepsy. The following are unquestioned equivalents:—

1. Mere interruptions in the continuity of consciousness; loss or mere clouding of consciousness for a few seconds or minutes with pallor of the face (mental absences without any accompanying motor or especially convulsive disturbance).

2. The same defect or clouding of consciousness associated with partial muscular spasm. These may be limited to momentary squinting, grimacing, twisting of the head or the limbs, or stuttering of incoherent words.

3. The same disturbance of consciousness with simultaneous automatic, dreamy, impulsive acts; for example, urinating, collecting objects that are near at hand, running blindly, etc.

According to Griesinger, even attacks of vertigo which mount from some peripheral part of the body to the head, thus having an aura-like character, and which are attended with apprehension, momentary disturbance of consciousness, confusion of thought, palpitation, and automatic movements of the lips or of swallowing, may have the significance of an epileptic attack; the more if the patient runs about after his confused dream, saying irrelevant things, committing senseless acts, etc., and if the attacks are repeated.

The observations of Emminghaus make it probable that paroxysmal sweating occurring without cause, and especially without muscular exertion, with or without vertigo, and with reduction of motor innervation and trembling, are to be interpreted as attacks of an epileptic neurosis.

This is also true of the peculiar attacks of sleep observed by Westphal and Fischer in patients suspected of epilepsy; and of attacks, observed in epileptics, of neuralgia, for the most part intercostal, which were accompanied by disturbance of consciousness and other accompaniments of the otherwise classic convulsive attack; further, of frequently repeated attacks of fainting with sudden loss and sudden return of consciousness; and finally of certain cases of nocturnal fright and somnambulism in persons who later presented epileptic attacks.

This enlargement of clinical experience, which is still very incomplete, makes the description of the characteristic marks of the epileptic attack more and more difficult, but still indispensable, if the clinical idea of epilepsy is not to pass away.

The epileptic attack is undoubtedly a peculiar manner of reaction of an abnormally altered brain, and at the same time a symptom-complex which can never be resolved into a single symptom.

In great part the clinical picture of epilepsy probably depends upon the regional radiation of the cerebral process lying at the foundation of the epileptic attack; as, for example, vertigo upon vascular spasm of the cerebral hemispheres; or the classic attack upon the spreading of the process to the motor cortical fields and the subcortical centers.

In the present state of scientific knowledge, it seems justifiable to recognize at least the absences and attacks of vertigo as manifestations of like value with the ordinary epileptic attack, and the other paroxysmal manifestations which occur in epilepties, or in those suspected of epilepsy, as epileptoid, until it is possible to establish them as equivalents of the ordinary attack.

The general characteristics of the epileptic or epileptoid attacks are: Repeated occurrence, in one or another of the forms mentioned, with disturbance or loss of consciousness while they last, of sudden symptoms of disturbed cerebral circulation due to vascular spasm, whether these consist of pallor of the face or of the fundi, or of partial or general spasmodic motor disturbances.

In any event, a single symptom is not sufficient to establish the diagnosis of epilepsy nor is a single epileptic attack. But we are not hampered in practice merely by the incompleteness of our knowledge as to what attacks are to be regarded as epileptic, as well as by the protean manner of the manifestations, but also by the difficulty that actual epileptic attacks may escape observation. This is especially true of slight vertiginous attacks which occur at night. In such patients it may happen that neither patient nor others have any suspicion of the serious nervous disease that exists.

At least, as suspicious symptoms of nocturnal epilepsy, we may regard occasional and repeated wetting of the bed, falling out of bed, ecchymoses of the face (especially of the sclera), injuries of the tongue, headache, dullness and confusion of thought, and lassitude and depression on waking.

Great diagnostic significance is found in the fact that the epileptic is not merely ill during his attacks, but constantly ailing, chronically nervous. The attacks are only especially marked symptoms of an abnormal condition of the central nervous system, which is present also during the intervals. This condition may be hereditary or induced by injury to the brain; and this makes it clear how slight exciting causes, like fright, may bring on the outbreak of epilepsy. Experimental pathology has succeeded in inducing this abnormal cerebral condition (epileptic change) artificially by injury of the spinal cord or peripheral nerves (Brown-Séquard); by cerebral concussion (Westphal); by injury of parts of the cortex (Hitzig). It also shows itself in a functional intensification of cerebral excitability, especially of the vasomotor and convulsive centers.

As an expression of the lasting cerebral change in epileptics there are numerous symptoms observable during the intervals which, in part, show the existence of an abnormal cerebral condition in general, and, in part, as a matter of experience, indicate the existence of epilepsy, and which, perhaps,

may bring into relief, from a diagnostic standpoint, doubtful symptoms of an attack.

As marks indicating that the individual is affected nervously in general, there are symptoms of a neuropathic constitution,—irritable weakness, headache, vertigo, intolerance of alcohol, tremor, occasional twitchings, muscular cramps (especially in the calves), vasomotor symptoms (alternating blushing and pallor of the face); cold, cyanotic extremities; nystagmus.

As indicating the existence of a probable epileptic neurosis there are certain peculiarities of character (so-called epileptic character), which, on careful observation, so many epileptics present. The most important of these are the abnormal emotional irritability and a moody character which alternates between exaltation, with abnormal intensification of the will, and mental depression (moroseness, hypochondriac depression, with or without imperative ideas, mental apathy, dejection, apprehension that may become anxiety in connection with indifferent acts, depression, and apprehensiveness). The character, however, is especially distrustful, uncommunicative, susceptible, peculiar, incomprehensible, obstinate, self-willed with foolishness in sticking to ideas; so that the individual seems incapable of accommodating himself to any given relation and appears in the rôle of a household tyrant, misanthrope, or uncompromising friend.

In many epileptics there is also an element of bigotry in the character: a pathologic religiosity, a hangdog, hypocritic nature, which, in accordance with whether the patient is exalted or depressed, expresses itself in exaltation or mortification. This bigotry and air of the martyr are in remarkable contrast with the irritability, combativeness, brutality, and moral defect of "poor epileptics, who, with a prayer-book in the pocket and the word of God on the tongue, have the most extreme wickedness in the heart" (Samt).

Along with these lasting abnormalities, partly as prodromes of the oncoming epileptic or epileptoid attack, partly following the attack, there are pathologic symptoms, the diagnostic importance of which is increased, since they frequently occur quite typically before or after the attacks.

These symptoms—which precede attacks a few minutes, hours, or days—have oftentimes the character of an aura. Besides ascending sensations from the extremities or from the epigastrium to the head, with chilly feelings and dizziness, in the psychic and sensorial domain there are frightful hallucinations of sight, hearing, and sometimes of smell, and also subjective sensorial impressions, like roaring in the ears, photopsias, and chromatopsias, especially red flames[1]; precordial distress with violent impulses, mental depression, intensification of the habitual irritability, formal disturbances of thought (confusion, difficult thinking, imperative ideas); a clouding of consciousness as if intoxicated. Sometimes there is maniacal gayety, with increased activity of thought and kleptomaniac activity.

As mental disturbances following immediately upon an epileptic attack, there may be great mental prostration with inability to think, with profound

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[1] In a case that came under my observation the sensorial aura each time consisted of the vision of a man with a red mantle and beard. The patient then became sick. He saw the phantom vomit. Then the patient vomited and lost his senses.

confusion and disturbance of apperception going to the degree of stupor, which may last from half an hour to several days. With this there may be great emotional depression with excessive irritability and raptus-like impulses, which, either as a result of frightful visions, hostile apperception, or fear, may lead to suicide, murder, or arson.

Kleptomaniac impulses, as an accompaniment of mania-like states of exaltation, may occur. This post-epileptic stage of disturbance of consciousness and psychic pain, as a rule, soon passes away, to give place to the former state of mental clearness.

However, as a result of repeated epileptic attacks, it happens that in the intervals between attacks a peculiar somnambulistic, dreamy state of consciousness exists in which the patient seems to be quite himself, speaks connectedly, acts naturally, and even goes about his affairs, though, however, he is not himself: *i.e.*, not in possession of his proper self-consciousness, so that later he knows nothing of what he has done while in this condition. This peculiar epileptic state of clouded consciousness may last several hours.

Epilepsy is not merely attended by elementary psychic disturbances; it frequently enough leads to a lasting and profound deterioration of the mental functions, upon which foundation acute delirium and less frequently actual psychoses, partly as a complication of the entire neurosis, partly as equivalents of epileptic attacks, may make their appearance.

The lasting change of the psychic personality may be called epileptic psychic degeneration; the transitory symptom-complex is called by an older general term "epileptic mania," although it has nothing in common with mania, and by this term the most varied forms of mental disturbance are designated—acute mental attacks which have not yet been sufficiently or satisfactorily studied.

The epileptic psychoses—*i.e.*, those that are specific and occur only in epileptics—have only been investigated of late and especially by Samt. They have many points of contact with and transitions to certain forms of periodic insanity, especially with those that consist in attacks of short duration.

Epileptic insanity includes psychopathic states that are partly lasting, partly transitory. It may be classified as follows:—

1. Epileptic psychic degeneration.
2. Transitory and usually delirious psychic disturbances of epileptics.
3. Protracted psychic equivalent.
4. Epileptic psychoses.

1. Epileptic Psychic Degeneration.

If one examines the mental condition of a large number of epileptics, the fact is brought out that in the majority of them the in-

tegrity of the psychic functions is lastingly disturbed. The following are the constant signs of this profound mental change:—

1. A reduction of intellectual power, that in the slighter cases is a mere weakness of reproduction, apperception, and combination of ideas, which expresses itself clinically in forgetfulness, difficulty of judgment and comprehension, defective apperception, and functional weakness of the psychic mechanism in general. This psychic weakness may be observed in all degrees, from feeble-mindedness up to complete dementia.

Sometimes this degenerative manifestation affects especially the ethic side of the individual, and expresses itself clinically in functional weakness or loss of ethic and esthetic feeling and judgment, which finds its practical expression in brutality, cruelty, and criminally immoral conduct; and the immoral criminal impulse may occur periodically and with an absolutely impulsive character.

Sommer has closely studied this post-epileptic dementia. In the first place, the temporary dullness of intelligence following upon the epileptic attacks becomes more and more prolonged. Apperception becomes duller and increasing intensity of stimuli is required in order to produce perceptions. With this there is forgetfulness: first, for late events, then gradually the impressions of remoter periods are destroyed. Still, during a long period the patient feels this loss and tries his best to conceal it. In general, the patient is conscious of the sad condition that has made him a burden to himself and others, and, according to Sommer, this explains in part his tendency to lean on religion, in which he seeks comfort in his devotion and unselfishness toward others. However, these religious and altruistic tendencies are frequently distorted by intense egotism and great irritability.

2. Excessive irritability, which at the slightest cause explodes into angry, violent affects, and may go to the extent of paroxysms of rage.

3. Intensification of the affective disturbances which have already appeared in the epileptic character, and then the morose humor and the contemptuous, distrustful appreciation of the external world take more and more the upper hand, manifest in the facial expression, and giving to the patient's physiognomy a sinister look.

4. In this picture of degeneration there are now and then imperative ideas, primordial delusions of persecution, frightful hallucinations, attacks of fear, impulsive acts, which are partly to be regarded as auræ of unobserved or abortive epileptic attacks, partly as independent elementary psychic disturbances.

5. In many cases of advanced epilepsy, or in cases that began in early years, with these phenomena of psychic decay there are also motor disturbances which, especially in cases of epilepsy that have arisen in childhood, fre-

quently present the character of marked paralysis of hemiplegic character, and tend to become complicated with contractures and secondary muscular atrophies. In other cases we observe tremor, nystagmus, inequality of facial innervation, choreiform movements, paralysis of the tongue, and aphasic symptoms. Sensory disturbances are also frequent in epileptic degeneration. They may present themselves in the form of neuralgia in distinct nerve-paths, or as general hyperesthesia.

In the final stages of epileptic degeneration the signs of psychic deterioration are accompanied by others of physical decay. The features take on a dull expression, the subcutaneous adipose tissue becomes hypertrophic, and the features thus have a coarse, plump appearance, and the lips are prominent.

2. Transitory Attacks of Psychic Disturbance.

These consist of disease-pictures limited and sharply defined, lasting from a few hours to a few days, which come on suddenly and as suddenly disappear. They may be forerunners, or more frequently the result, of epileptic attacks, and they may occur immediately after or within a few hours or days. Sometimes, but infrequently, they occur in epileptics as independent attacks in the interval. They are very prone to occur after repeated epileptic attacks, especially when these have been preceded by a prolonged period of freedom from attacks. Sometimes it happens that the vertiginous or classic epileptic attack is supplanted by these psychic attacks, which then may be regarded as equivalents. There are authentic cases in which this equivalent has lasted for decades. It is usual to call such cases larvated, or psychic, epilepsy.

Since this transformation of the neurosis, this substitution for the attack, occurs with especial facility in cases of mere vertiginous epilepsy, the original picture of epilepsy may become distorted. Just as the clinical forms of the usual epileptic attacks in the course of experience have been enlarged by observation, so have the psychic attacks and equivalents. It may be presumed with reason that we are not yet acquainted with all possible equivalents, and that many cases of extremely acute insanity, especially transitory mania, raptus melancholicus, and periodic insanity in short attacks stand in genetic relation to an epileptic neurosis.

The clinical pictures here are extremely varied. This is especially due to the fact, not only that the various equivalents alternate in the same individual, but that they may be combined in a single attack. Just as in the most varied somatic forms of epilepsy, disturbance or loss of consciousness remains a constant distingushing feature, so in these psychic attacks this is also a distinctive mark. They run their course upon the general basis of disturbance or loss of consciousness, which leaves but a troubled, summary, defective, or even absolute loss of, memory.

The forms of disturbance of consciousness lying at the basis of these so variable psycho-epileptic attacks are: *(a)* stupor; *(b)* states of clouded consciousness. Upon this foundation, impulsive acts, delirium, hallucinations, states of fear, and other elementary disturbances may arise as complications. The disturbance of consciousness present gives to these acts and the delirium of the patients an incoherent, dreamy, confused character—a feature that is well-nigh characteristic.

The most important transitory psychic epileptic attacks in the form of simple disturbance of consciousness, or as a complication with other elementary psychopathic symptoms, are:—

(a) Stupor.

This occurs rarely as an independent manifestation, usually as a sequel of attacks. It may last from half an hour to several days. It is rarely pure; for the most part, it is accompanied by frightful delusions and errors of the senses. Sometimes instead of these there are religious delusions of an expansive content, characterized by dreamy incoherence and absurdity. Samt has also observed verbigeration, with profound dreamy confusion. For the most part, there is mutism. According to this author, this epileptic stupor is distinguished from all other kinds of stupor by difficulty of apperception, profound disturbance of consciousness, incoherence, and sudden acts of violence.

CASE 44.—Epileptic stupor.

G., aged 34, single, day-laborer, originally weak-minded; epileptic since childhood. On August 6, 1873, he left his home "because God called him." He was in a state of epileptic delirium, spoke confusedly of the devil, God, robbers, enemies, with consciousness profoundly disturbed, apprehensive, stuporous for hours at a time, staring before him fixedly. On August 12th he came to himself and remembered only that he had been confused in his head, had seen flashes of fire, and had heard a messenger from Heaven. In the asylum epileptic attacks every two days, partly classic, partly consisting of mere tonic spasm with loss of consciousness. They occur without warning, last several minutes, and leave behind a state of cloudy consciousness lasting several hours. With the use of potassium bromide (6 grams) they become less frequent and disappear entirely in time. Since 1874 every three or four months peculiar states of stupor occur in which the patient lies in bed staring with eyes wide open, dilated and lazy pupils, and anesthetic conjunctiva—speechless, without reaction, grimacing play of the facial muscles. The skin and mucous membranes are, during an attack lasting eight days, remarkably pale, and the arteries greatly contracted. The patient retains attitudes given to him passively in a cataleptiform way, without presenting *flexibilitas cerea*. He does not sleep and he has to be fed. He is untidy. Stimulation of the

skin and sensory organs produce no reaction. After eight days he comes to himself and knows nothing of what has happened. In 1877 there were repeated vertiginous attacks.

May 13, 1877, during the course of an attack of stupor, there was a state of psychomotor excitement lasting several days, in which the patient, quite unconscious, danced, turned himself about in a circle, trembled throughout his body, and verbigerated constantly in a tone of a preacher in a new, incomprehensible language containing only broken German words. The patient died of phthisis, May 24, 1877.

(b) States of Clouded Consciousness.

They appear as sequels of attacks, between attacks, and as independent psychic disturbance lasting from a few hours to a month. There is variation of intensity during the continuity of the phenomenon. They rarely appear in a pure form, and are usually complicated by other elementary disturbances. The following disease-pictures may be mentioned as especially important clinically and forensically:—

1. States of clouded consciousness with fear (petit mal—Falret): *i.e.*, a state of half-conscious, but profound, psychic depression which is felt as profound psychic pain, attaining at times the degree of demonomania, and associated with fear, confusion of thought, and, usually also, with painful imperative reproduction of a few frightful ideas. Under the influence of this fearful cloudiness and helplessness, the patient becomes desperate and driven about by fright. He perceives those around him, for the most part, as hostile, and assumes an aggressive attitude toward them. Very frequently, under such circumstances, there are destructive acts—impulsive—toward his own person, caused by apprehension and imperative ideas; or toward others as the result of a like cause or of hostile apperception. Brutal violence and recklessness characterize these destructive acts. In consonance with the profound mental confusion and disturbance of consciousness, for the period of the attack, memory is only summary or cloudy.

This disturbance is less frequent after epileptic attacks; more frequent as an independent manifestation, and, according to Falret's observation, more frequent in the vertiginous than in the convulsive form of epilepsy.

CASE 45.—States of epileptic clouding of consciousness with apprehension (petit mal).

S., salesman, aged 29. Mother neuropathic, afflicted with convulsions. He had convulsions until his fifth year. From that age until his ninth year he was seen to walk in his sleep. Thereafter the patient was nervous, irritable, and apprehensive. From his sixteenth year he had attacks of violent head-

ache, habitual depression, morose character, great emotional irritability. In his eighteenth year, causeless attempt at suicide by means of matches. Until his twenty-fifth year frequent attacks of causeless fear and oppression, in which he wandered about with consciousness much disturbed. These attacks (petit mal) lasted some hours. Several times a year the patient suffered with attacks of vertigo, with darkness before his eyes and disturbance of consciousness (vertigo). The patient became a business man and associated himself in 1875 with another. The business did not prosper. His partner was not strictly honest. Since the beginning of April, 1876, had sleep, headache, frightful dreams, difficulty to distinguish dreams from reality on awaking, depression to the degree of *tædium vitæ*.

In the night of May 5 and 6, 1876, he dreamed that his partner was before him, threatening him. He awoke in a confused state, sought a weapon with which to kill his bedfellow, whom, in his confusion, he identified with his partner. While seeking for a weapon he came to himself and recognized the danger he had been in of killing an innocent man. On the morning of the 6th he was depressed, and in the afternoon, in order to distract himself, he took a walk in the park.

Suddenly he became dizzy, saw blackness before his eyes, and was overcome with horrible fear. It seemed to him as if the people were rushing upon him and pursuing him. Driven by unspeakable fear, he ran away without knowing where. In his flight he still saw the people indistinctly.

He did not know how long he ran about. Finally breathless, he asked the police to come to his assistance. Immediately admitted into the hospital; he seemed apprehensive. Consciousness was clearly much disturbed. In the evening he became lucid and free from fear. Large head (58 centimeters). A scar on the left side of the tongue. The patient denied actual epileptic attacks. Since further observation showed nothing remarkable, aside from a certain amount of depression, at his request he was discharged.

2. A further stage of development of the condition under discussion, due to profound disturbance of consciousness and complicating delusions and hallucinations, is represented by the so-called grand mal (Falret): *i.e.*, a sudden outburst of violent hallucinatory, persecutory delirium. The frightful content of the delusional ideas and errors of the senses, which consist principally of horrible visions, ghosts, and threats of death, and the confusion and disturbance of consciousness, give to this epileptic delirium peculiar features which are still more emphasized by the not infrequent episodes of stupor, as well as occasionally by those of religious primordial delusions. In reaction to this frightful, apprehensive content of the profoundly disturbed consciousness, there are violent psychomotor acts in the form of blind violence toward the ghosts and toward others that are thought to be hostile; states of violent excitement, in which the patient, whose rage does not allow him to be approached, strikes about him in fear of death and in despair, bites and spits, and, as the records of legal medicine show, is extremely dangerous to others.

A rare variety of this frightful hallucinatory delirium I have called attention to as *hypochondriac delirium.*

The subsidence of this state of grand mal is sudden, at least as far as the delirium is concerned, though usually after its disappearance there is still a condition of clouded consciousness lasting hours or days; or it passes through a stuporous state to lucidity.

The whole duration of the attack may be from a few hours to a few days. Memory, like that of patients awaking from a dream, is extremely summary. As a rule, there is defect of memory for the entire duration of the attack. These states of delirium occur mainly in connection with convulsive epilepsy, and usually as prodromes or as sequels of classic attacks, especially after a series of them.

CASE 46.—Delirious post-epileptic states of clouded consciousness (grand mal).

M., aged 25, son of an official, was admitted to the clinic July 9, 1876. His father was an extremely irritable, choleric man. At the age of six weeks the patient had a general eczema, which lasted until his fourteenth year, and since then it has recurred from time to time. In his fourteenth year there were at times twitchings in the upper extremities, with dizziness and clouding of consciousness. After a few months, following cholera, there was a single genuine epileptic attack. Since then the attacks have returned at intervals of a few days or a week. The patient became irritable, and the mental development was retarded.

Since the latter part of 1875 there has been post-epileptic violent delirium about every three months. After frequent attacks, on July 9, 1876, a state of clouded consciousness came on, in which the patient was sleepless, and in expression and mentally he was profoundly confused. On the 11th, in the night, a violent frightful delirium was developed. The patient became very much frightened, suddenly got up, struck a patient, throttled him, cried, raved, and struck wildly about him. The next morning, with astonishment, he found himself in an isolated cell. He was still in a state of mild confusion, and could only say that he feared that he was surrounded with murderers, had heard frightful noises and terrible discharges of cannon, and had seen everything in fire and blood. On the afternoon of the 15th delirium again came on and lasted until the 21st. The patient presented exactly the same picture as from the 11th to 12th. He raved and cried for help. Head congested; pulse, 120 to 140. Until the 23d the state of clouded consciousness continued. The patient is treated with potassium bromide (from 3 to 12 grams daily). The epileptic attacks grow less frequent; still less frequent, hardly one a year, are the attacks of post-epileptic delirium, which, when they occur, conform to the previous attacks. The epileptic character (irritability, moroseness) and weak-mindedness do not change. Now and then the patient becomes suddenly aggressive toward those around him as a result of illusions (the faces of those around him change into horrible masks). Sometimes there are states of slightly clouded consciousness with abrupt hallucinations (scolding voices, and communications that his parents are dead, etc.), which, perhaps, may be regarded as abortive states of delirium.

CASE 47.—Post-epileptic states of frightful delirium and fragments of religious expansive delirium.

H., aged 25, son of a farmer, admitted February 14, 1875. He has an epileptic sister. During the period of dentition he had violent convulsions, began to speak only at the age of three, and was imbecile.

In 1858, without cause, epilepsy began. The attacks occurred at first two or three times a day. Later only once in two weeks, but they were more severe and lasted longer. Great emotional irritability; progressive mental deterioration. Since his twentieth year, now and then, after frequent attacks, states of frightful delirium. They are quite typic, occur a few hours after the epileptic attacks, which leave behind a state of profound mental confusion, and last as long as a week. Snapping of the fingers, visions of his father threatening him, and hostile perception of those around him always introduce the delirium. During its continuance there is profound disturbance of consciousness and confusion: "All will be made clear—the Almighty does not abandon me—you are killing me—we shall meet in hell." The patient raves, fights with the attendants, defends himself desperately, will wear no clothing, tears up everything, and rolls in straw. Episodically, usually toward the end of the paroxysm, the patient sings and shouts, and makes out of straw, clothing, etc., a kind of altar; dances around it, and thinks he is in Heaven. The state of disturbed consciousness outlasts the delirium some hours or days. There is absolute amnesia for all the events of the attack. The patient has convergent strabismus that has existed from youth. The left pupil is more widely dilated than the right. The patient could not be brought under regular bromide medication. After a short stay in the hospital there was *status epilepticus* and death.

3. States of clouded consciousness with religious expansive delirium.[1] Clinical appreciation of these not infrequent deliria in epileptics belongs to recent times. They may be regarded as equivalents of the foregoing; and they likewise occur paroxysmally and in distinct attacks. They are concerned with divine visions and divine things ("divine nomenclature"—Samt). The patients take themselves to be God, Christ, prophets, and think they are in Heaven, to which ideas muscular anesthesia and the consequent delusions of flying to Heaven contribute. The patients during their delirium are in hallucinatory relation with God, receive revelations, commands, and the like; for example, to murder their relatives that they may go to Heaven. Those around them are frequently taken to be Jews or wicked and threatened. In the midst of this happy delirium the scene may change—the patient sees hell and divine judgment before

[1] Toselli ("Ueber Religiosität der Epilepsie," Arch. Italian., 1879, March, page 98). Skae (Journal of Mental Science, 1874) calls attention to the fact that the epileptic visions of Anna Lee gave rise to the sect of Shakers; that Swedenborg's deliria created sects in Sweden and England; that Mohammed's hallucinations were the origin of Islam.

him, and feels that he is a repentant sinner and wishes to make atonement, but he always comes out of such episodes as a person that has received divine grace. These religious deliria are also characterized by their impossibility and their fairy-like character. The disturbance of consciousness is, as a rule, not very profound, and the events of the delirium are at least remembered summarily; but there are also cases with complete absence of memory.

Episodically the condition may be intensified to ecstasy. Too, intercurrent states of stupor are observed. The delirium passes through a state of stupor or a state of clouded consciousness to lucidity.

CASE 48.—Epileptic religio-expansive delirium.

T., aged 50, day-laborer. As a small child he had convulsions, which developed into epilepsy. At first the attacks occurred only once in two weeks, but later presented the characteristics of classic epilepsy. Of late years religious delusions had been associated with them, as a result of which the patient was brought to the asylum on August 4, 1873. Under observation six years in the asylum there were genuine attacks of epilepsy which occurred a few days apart, preceded by increased emotional irritability and followed by mental cloudiness and confusion lasting several hours. Potassium bromide had a satisfactory effect. There are no anomalies of the skull or vegetative disturbances of importance. There is clearly a moderate degree of mental enfeeblement. The patient is a prototype of the epileptic character: a morose, irritable, bigoted, hypocritical man, who has always the name of God on his lips, the prayer-book in his pocket, bemoans the wickedness of the world, turns his eyes up when there is anything said of divinity or of heavenly love and goodness, but when a fellow-patient disturbs his devotion and Pharisaic calm in the slightest he acts in the most brutal way. When he is disturbed in his prayer at table, he immediately falls upon others, provoking quarrels and declaring religion in danger.

He keeps apart from others, does not work, lives in God and the thought of eternity, and regards his being in the asylum as martyrdom for which God will recompense him. Three or four times a year, sometimes before, sometimes after a series of attacks, less frequently without attacks, and then usually as a result of anger, the patient becomes alternately irritable and agitated. He scolds terribly about his wicked and sacrilegious companions. His consciousness becomes clouded, he looks upon others as the devil, thinks that religion is in danger, that he must defend it and destroy the enemies of God. He raves blindly around and asks to be crucified for the true faith. At the height of the paroxysm he falls into ecstasy, shouts, sees God face to face, strikes his breast, and says that he is the true man of God, Christ, the true defender of God, prophet and martyr. He wished to let himself be crucified for the true faith, but when he was about to carry it out he had noticed that another was on the cross. Episodically he raves and rages about his sacrilegious companions whom he takes for the devil, sinners, damned, etc.

During this religious period consciousness is decidedly clouded, but it is still possible for external impressions to reach it. In harmony with this,

there is no defect of memory left behind. The patient remembers his divine visions and does not correct them.

The attacks are typically congruent, the only difference being that sometimes they last one day, and sometimes five or six days. A state of clouded consciousness and great irritability forms the transition to the condition during the intervals.

4. Peculiar states of clouded consciousness with dreamy romantic ideas, usually of expansive content, which, with the varying condition of consciousness, appear now as mere imperative ideas, now as delirium. The patient, apparently himself and acting and speaking consciously, is nevertheless in a dreamy state of clouded consciousness comparable to that of the somnambulist. He acts in accordance with his dreamy romantic ideas, carries out his delusional rôle or mission, and as a result comes into dangerous conflict with actuality and his real interests. Thus there may be wandering, vagabondage, desertion, cheating, theft, and the like, for which the patient has merely a summary or no memory at all. The duration of these states is from hours to months. It seems that they occur only in individuals not subject to classic attacks of epilepsy, or who have them infrequently, or, in their place, vertigo or attacks of fear.

CASE 49.—Epileptic dream-states.

Iglow, aged 25, a baker, father a drunkard, showed from childhood a persistent angry temperament, suffered with nystagmus and in his fourteenth year began using alcohol to excess, since which time he has occasionally done peculiar acts while in a dazed condition and without definite subsequent knowledge of them: *e.g.*, swimming a river. In his sixteenth year he was suddenly seized with the impulsive idea that he was the Prince of Servia, and it was with difficulty that he restrained himself from believing it. In 1866 he was in an asylum three months on account of confusional insanity. During this time he imagined he was the Prince of Servia, and the idea often came to him after he was discharged from the asylum.

In 1867, without any reason, he ran away from his work, threw away his possessions, squandered his money in drink, wandered about in a dazed condition for three days, then became conscious, realized what a foolish thing he had done, and was ashamed of his conduct.

In 1868 he was a second time placed in an asylum, suffering in the same way as when confined before.

In 1869, after his second discharge, he suffered at times with great anxiety, would awake from terrorizing dreams with fear, and at such times noticed a cramp in the toes of left foot. The dazed mental condition and purposeless acts were noticed especially after alcoholic excesses.

In 1871 he had his first typic epileptic attack, which was preceded by fear and accompanied by spasmodic contraction of hands. He was before a bake-oven, called for help, and became unconscious. After this attack he abstained from drinking and remained well until November 24, 1874, when he had re-

peated epileptic attacks which caused him to discontinue his work. Without means he went to live with his brother, drank excessively, and passed into a dazed condition. One day, to his great surprise, he was arrested, and was informed that he was guilty of "*lèse majesté.*" He was in prison two months; there he became delirious, and one day declared himself the Prince of Servia and wished to return to his army in Belgrade, etc. When he arrived in the asylum where he was sent, his mind was clear and he corrected and laughed at his foolish ideas, with only a sort of vague recollection of what had occurred while he was delirious. Observations made at this time showed mental integrity, nystagmus, paresis of left angle of mouth. Once he awoke with fear and cramp of toes of left foot. After this time no further epileptic manifestations were observed.

5. Confused states with excitement in the form of moria lasting hours or days. This very infrequent form of epileptic transitory disturbance, in which the patients present the picture of apparent moria (silly activity, laughing, silly jokes, making faces, tricks, etc.), but which, owing to profound disturbance of consciousness and defect of memory are clearly separated from similar conditions in simple maniacal insanity, has been repeatedly observed by Samt, with consecutive or episodic stupor.

CASE 50.—Epileptic states of confusion with excitement in the form of moria.

B., aged 25, daughter of a day-laborer. From childhood epileptic and imbecile. She was found in a field some miles from her home in a state of profound confusion, singing and dancing, and brought to the asylum. There she had frequent and usually grouped attacks of classic epilepsy, which recurred at intervals of a few days. Thereafter, and sometimes also as an independent phenomenon, there were typic congruent paroxysms of moria-like excitement lasting as long as three days, which differed from analogous conditions that occur in mania only in the profound mental confusion and disturbance of consciousness.

The patient began suddenly to sing, to make pleasant faces, and to talk incessantly and incoherently. She shook with laughter, danced around, took grotesque attitudes, rolled on the floor, flirted with the doctors and the patients, whom she absolutely mistook, undressed, arranged her hair, and ran around the ward. Pulse small, artery contracted, extremities cool, sleeplessness during the continuance of the state of excitement. The profound state of clouded consciousness outlasted the excitement from a few hours to a day. Absolute amnesia for the paroxysms, which occurred two or three times a month. Potassium bromide was without effect.

It is of the greatest importance to recognize the neurosis which lies at the bottom of these protean clinical pictures. Important points in this sense are: the etiology of the case, the history, the appreciation of the symptoms during the intervals, the symptoms of the attack, and the comparison of one attack with another.

1. With respect to cause, the important points are: hereditary predisposition, trauma capitis, and rickets.

2. In the history, the object is to search for the presence of any suspicious attacks which might be epileptic. In this direction important points are convulsions in childhood, attacks of nocturnal fear, sleep-walking, along with other attacks which are recognized by science as epileptic or epileptoid. Special attention must be directed to indications of nocturnal attacks occurring in sleep (*vide* page 477).

3. The symptoms during the intervals are of the greatest significance (epileptic character): elementary psycho-cerebral disturbances, signs of epileptic degeneration.

4. The following speak for the epileptic nature of a psychic attack:—

(a) Its occurrence with aura-like symptoms like those that occur before the ordinary epileptic attacks.

(b) Suddenness, short duration, and sudden disappearance of the symptoms, like those that occur after vertiginous and classic epileptic attacks, especially stupor.

(c) In the attack itself: the exquisite frightful character of the delirium and hallucinations, and also the divine nomenclature, especially when it occurs with the former; and further the profound disturbance of consciousness, the dream-like incoherence, and the episodic occurrence of stupor.

(d) Imperfect memory or absolute amnesia for the events of the attack. As Samt showed, memory may be present immediately after the attack, but then is lost.

(e) The comparison of attacks, in so far as they are typically congruent, or at least (there are often equivalents) when it is possible to discover the recurrence of certain attacks which resemble one another.

(f) The acts of the patients in such attacks, owing to the profoundly dream-like or clouded state of consciousness, with the incoherence of ideas, the frightful character of the dreamy consciousness filled with delusions and errors of the senses—at least in the forms of petit and grand mal—are without motive, aimless, reckless, sudden, noisy, without consideration of means, and often absolutely impulsive outbreaks of blind rage and violence.

3. Protracted Equivalents.

In epileptics there are attacks of delirious insanity that last several weeks or months, and which, owing to certain clearly defined features, point directly to the epileptic basis and are specific. We

owe this knowledge to Samt, who even regards it as proved that by the specific characters of epileptic insanity it can be identified when there are no other epileptic antecedents.

As the specific signs of epileptic insanity Samt recognizes: acute outbreak; predominating states of fear with mixture of frightful delusions and corresponding hallucinations, for the most part, about danger of death; especially the crowding of masses of forms around, so frequent in epileptics, interrupted, however, by delusions of grandeur, especially of a religious character; divine nomenclature, great irritability, and relative lucidity with actual state of clouded consciousness; gradual subsidence of the attack and various forms of defect of memory for the events of the attack; further, reckless acts of extreme violence; stupor with characteristic reaction in speech of various degrees of intensity; finally, various degrees of incoherence, of partial lucidity, on the one hand going to the extent of dream-like absurdity and incoherence, and, on the other, to illusional and hallucinatory incoherence, like that of delirium tremens.

The forms under consideration here in large part are protracted psychic equivalents, or perhaps, more correctly, repeated relapses that are at the same time protracted. These conditions might quite as correctly be called epileptic hallucinatory insanity. After leaving aside such cases as have no certain epileptic antecedents (as should be done in a text-book) there have come under my observation cases of petit and grand mal, of religious delirium, and of stupor, in harmony with the description set forth above.

These states have in common: the prolonged profound disturbance of consciousness (especially of apperception), more marked than in the ordinary psychosis; the great confusion of thought; the profound remissions which may become intermissions of the delirium, with which, however, there are then usually states of clouded consciousness and stupor; the very summary memory or amnesia for the events of the attacks; finally, the sudden outbreak and subsidence through a stage of clouded consciousness and stupor.

CASE 51.—Protracted post-epileptic delirium.

C., aged 25, student, admitted to the psychiatric clinic December 7, 1881. His mother was insane. He developed slowly and was of weak mental power. In his fifteenth year he became insane and passed two years in an asylum. According to the description given he had monthly attacks lasting fourteen days, exactly like those to be described. Thereafter he was well, sober, industrious. In the last half of November, 1881, he had facial erysipelas with moderate fever. December 4, 1881, he was peculiarly oppressed. He went to church and referred some of the passages in the sermon concerning sin and

death to himself. He went home, wept, was depressed, disturbed, pale, looked cast down, and complained of violent headache. In bed he noticed that the whole room was raised up in the air with himself. It seemed to him as if God was pulling him up by the hair. He felt the lower part of his body ice-cold, and looking down he saw a dark chasm. He prayed from fear, felt animals biting his body, asked God not to let him suffer too much. Then he felt himself sink back to the earth, and the animals retire to an abyss.

On the morning of the 5th he went to his classes. There he heard a voice: "What would you do, you who have suffered for so many souls (of the damned)?" Since he was crying and disturbed, he was sent home. There he was taken with anguish. He took a prayer-book and read something about the grave, and became ice-cold.

On the 6th and 7th, with disturbed expression and violent headache, he lay sleepless in bed. On admission his expression was profoundly disturbed, apprehensive, incoherent, and he rolled on the floor from headache. No painful points, symmetric head, no fever, no vegetative findings. Until December 18th the patient is sleepless, with the exception of some sleep obtained by chloral; profoundly confused; depressed, with the exception of short episodes of relative clearness of consciousness. He frequently sings hymns, prays much in order to get relief and because the day of judgment is at hand. He tells of voices, says he is a great sinner, and talks of music that he hears. He sees the devil, ghosts, nude women, Christ saying mass, Death. Death has struck him dead. Often odors of blood; also of roses and violets.

December 18th the patient becomes free and no longer hallucinated, but remains slightly clouded in consciousness. He has summary remembrance for the delirious events. He relates that he saw hell, a ghost without a head, Heaven open in three sections, heard angels' voices; had sometimes pleasant, sometimes unpleasant odors; thought himself at the day of judgment, and had a feeling of happiness at being among the chosen. He denies epileptic antecedents. No history of the patient was obtainable from other sources. After January 4, 1882, he is less lucid, but depressed, taciturn, and thinks that if he had not prayed so much he would have been lost.

January 8th he has a genuine epileptic attack. Thereafter the patient is much disturbed in consciousness and clouded. He himself complains of being sick and confused in his head, says he had not slept in the night, that when he got up in the night he was dizzy and had once fallen. He had heard constant grinding of the teeth; had an oppressed feeling as if he were at the day of judgment. In the early morning he saw a dark-yellow curtain before the window torn in the middle just like the rent curtain of the temple at the death of Christ.

In the course of the day the patient was more and more confused and depressed (6 grams of potassium bromide daily). In the evening has incomplete delirium, sees Heaven, hell, purgatory, the yellow curtain covered with the tears of the dead. He is sleepless, anxious, depressed, sings hymns, and on the morning of the 9th tells of his visions, of trumpets, and other noises; of the perfume of violets, of the presentiments of his deliverance, and of his celestial beatitude. During the night of the 9th to the 10th he sees Abraham, Isaac, Moses, Christ, and God the Father. It was a terrible night. He appeared before the celestial tribunal. It was the last day of judgment, but he was counted among the just. In spite of that he is anxious, oppressed, de-

pressed, and in a weeping voice says that he is Christ, and in irritation that the cursed H. had already tortured him in hell. He begins suddenly to talk with Death, whom he sees in a corner. Irritated, delirious, confused in the afternoon, he thinks he is in the Holy Tomb and he will arise to Heaven when the last judgment is finished.

The night of the 11th he is sleepless, prays, sings "allelnia," proclaims himself Christ, reads the mass, lies at times in the position of one crucified, communicates with angels, kisses them, and fights with devils.

In the course of the day, with a pathetic manner, he declares that he is Christ, the master of emperors and popes, the emperor of the world, proclaims decrees, prays, recites the ten commandments, sings psalms, and says he sees the Red and the Blue Seas. On the 12th he is himself for a moment, recognizes those around him, and then he bends his head back in cramp, opens his mouth wide, and says: "Now I am dead." The remainder of the day he is dreamily delirious, absorbed in inner events, often falls on the floor and lies there in the position of the crucifixion. At times he preaches, acts the part of Christ, talks of heathen, Christians, Turks, and blood-money that has been paid for him. His grandfather is the Old Testament, he is the New Testament. Christianity falls into the hands of the heathen. There is only one God and Mohammed is his prophet. The patient's consciousness is profoundly disturbed. There is great irritability. He strikes the floor with his fists and takes those around him to be the devil. The night of the 13th he is sleepless, sings, prays, and cries out in rage.

On the 13th for a moment he thinks he is in the asylum, then in the Holy Tomb. He is the Crown Prince Rudolph, and he takes those around him for the emperor and apostles. In the afternoon he is seen in the position of one taking an oath. Then, profoundly contrite, he throws himself down on his abdomen and strikes his face and breast crying, "I have never killed anyone; I was foolish; asylum. I was never a God, never an emperor, never Satan. I said I was Christ; I am Christ with the crown of thorns, because I was never a forger of banknotes and never stole thirty kreutzers." The patient is constantly sleepless, contrite, profoundly confused. Has repeatedly all the pain of the last judgment day. Conceals himself in his straw, which he takes to be the Holy Sepulcher. Cries desperately, and occasionally has attacks of clonic spasms.

After a good night on the 20th the patient is temporarily in a remission, but much exhausted.

On the 22d apprehensive delirium begins again: he is again before a court. Soldiers shoot at him. He sees a crowd of devils, of corpses with red flags; God the Father; angels bring wine to comfort him, but he dare not partake of it.

On the 26th the delirium subsides. Consciousness becomes somewhat clearer, but the patient remains in a dreamy state, contrite and oppressed, still sees now and then the judgment and spirits. Again on the 28th the patient is in an exacerbation. The delirium presents a coarse mixture of frightful and pleasant situations, the former predominating. They are about judgment, martyrs, crucifixion, blood, and war; blood which the patient sheds fighting by the side of Radetzky against the Italians; then for a time he is Satan, and cries about the horrors of hell—how he bled and burned there. Episodically again he is the emperor, Christ, and in the Holy Sepulcher (straw). He takes

the physician to be the crown prince, and asks him whether he wishes to cut off his head. This had happened seven times. At night he sees war and blood, and speaks of coffins. As a reaction to the numerous changing delusions, he is at times contrite, anxious, despairing, trembling with fear of death; at times, angry to aggressiveness. At other times he is happy, reading the mass and singing hymns. He is, however, continually irritable, changed in expression, sinister, and confused.

On February 18th the patient falls sick with a fever (40.2° C.) and violent headache. The delirium ceases at once. The patient seems quite lucid, but peculiarly affected in the sensorium. On the 19th an epileptic attack. The following days the temperature varies between 38.4° and 39.8° C. Violent headache, vomiting, stiffness of the neck, and photophobia make a diagnosis of meningitis of the convexity more and more certain. On the 22d, at 4 o'clock in the morning, a series of epileptic attacks in which the patient died at 5 o'clock with symptoms of pulmonary edema. Autopsy: Diffuse purulent leptomeningitis, cerebral hyperemia, left hypostatic pneumonia with commencing pleurisy.

4. Chronic Epileptic Psychoses.

Though relatively infrequent, chronic psychoses are observed (Esquirol, Morel, Griesinger, Westphal, Gnauck) that differ in no way from those that arise upon a non-epileptic foundation, and therefore cannot be regarded as specifically epileptic. Experience also goes to show that upon the basis of epilepsy disease-pictures of the ordinary psychoses occur which are modified in course and symptoms by the special neurotic foundation.

Aside from dementia, which occurs so frequently as a result of epilepsy, and to which Sommer, Bourneville, and d'Ollier ascribe peculiar features, this is also probably true of certain cases of periodic insanity in the form of delirium.

The cases of epileptic psychoses thus far observed seem to belong exclusively to the psychic degenerations.

The prognosis of the single attack of insanity is favorable. The general prognosis of epilepsy with mental disturbance is bad; and in cases where epileptic degeneration has once begun it is quite hopeless.

Concerning the anatomic foundation of epilepsy there is still great uncertainty. The most various conditions are found. It is probable that often there are congenital developmental disturbances of the brain, glioma of the cortex, but especially partial encephalitis, as the foundation of the trouble. To the latter the sclerosis of Ammon's horn emphasized by Meynert must be attributed (Henkes, *Allgemeine Zeitschrift für Psychiatrie*, 34, page 38). Too, concerning the anatomic basis of the psychic disturbances of epilepsy, we can only advance assumptions amounting to the theory that they depend upon vasomotor disturbances, just as epilepsy in general seems to be a vasomotor neurosis of the central organ.

Atrophy of the brain, cloudiness of the membranes, have been found now and then in individuals who have died in the last stages of epileptic degeneration, and these, in a measure, explain the mental deterioration of such unfortunates.

The modern treatment of epilepsy, and thus of epileptic insanity, seeks to diminish the abnormal excitability of the brain and render the affected centers inexcitable to stimuli which might provoke attacks.

The best of all remedies now at our command are the bromine salts.

Hughes Bennett found that under treatment with bromides in 12.1 per cent. of his cases the attacks disappeared entirely; in 83.3 per cent. there was decided improvement; in 2.3 per cent. no result; and in 2.3 per cent. increase in the number of attacks. There is no doubt that in a few cases by persistent treatment with bromides during several years cures can be effected. All the bromine salts can be used, but their combination and administration in carbonic acid water is especially to be recommended ("Erlenmeyer's bromide water"). The combination of the bromides with aqueous extract of belladonna is commended by Ball and others.

The lowest daily dose with which we can hope to produce an effect is 6 grams (males) or 4 grams (females) for adults. Watery solution is the best. Repeated daily doses of from 2 to 3 grams diluted as much as possible are more advantageous than less frequent larger doses in concentrated form. The initial dose should be increased slowly under observation of its effect upon the attacks and the organism. Usually under 10 grams the effect will have been obtained. If for any reason it becomes necessary to discontinue the use of bromides, it should never be broken off suddenly, for abrupt suspension may cause frequent intense attacks, and even the occurrence of a dangerous *status epilepticus* is to be feared. Bromides may be given for years at a time in moderate doses without injury to the organism.

As an aid in the treatment with bromides antipyrin deserves mention, in about 1-gram doses a day in addition to the bromine salts. In cases that are retractory to such treatment, I have often had temporary success with amyl hydrate in doses of from 4 to 5 grams per day. This can be administered for months without injury to the patient; also trional in broken doses,—0.5 gram two or three times daily,—has some effect, but I have not yet had enough experience with it. The opium-bromide treatment of Flechsig (six weeks with the administration of opium gradually increased to 1.2 grams a day with sudden suspension of the opium and substitution of bromides to the amount of 7.5 grams a day, and finally reduction of the dose of the bromides after two months to 2 grams a day) is too little tested to be decisively judged. It is not without danger (several fatal cases, principally in *status epilepticus*), and can only be carried out in hospitals. In transitory insanity and in the protracted equivalents and chronic psychoses of epileptics, the bromides, the best anti-epileptic remedy, have proved to be without effect on the attack.

Inferior to the bromides are the other anti-epileptic remedies (valerian, oxide of zinc, silver nitrate).

The epileptic should avoid coffee, tea, alcohol, and tobacco. Vegetable diet is often very useful. Where the epileptic attacks occur frequently, with coma, hyperpyrexia, and danger of life, Krueg, in harmony with Wallis, has demonstrated the favorable effect of chloral hydrate by enema, or subcutaneously much diluted, experimentally in epileptic guinea-pigs and in epileptics. [Absolute restriction of the consumption of salt enhances the effect of bromides.]

CHAPTER III.

Hysteric Insanity.

PSYCHIC anomalies are a constant occurrence in the rich and varied symptom-complex of hysteria, though in the majority of hysteric patients these disturbances are only elementary (hysteric character).

Fundamental manifestations are the unstable equilibrium of the psychic functions, the extreme impressionability, the extraordinarily intense reaction of the mind, and the rapid alternation of forms of excitement (irritable weakness). The emotional anomalies stand in the foreground. The patients are extremely sensitive to internal and external psychic stimuli. At the height of the disease the feelings are no longer states of humor, but affects (psychic hyperesthesia). Since the psychic processes are usually colored with unpleasant feelings, the humor and affects are generally depressive; but, with the rapid change of ideas and the extreme emotional excitability, the state of feeling is not fixed. As a rule, there is an alternation of feelings and affects, and often a sudden change from crying to laughing. Since the lively colored ideas develop desires, and these are constantly changing, the patients seem moody and inconstant in their feelings for persons and things. The desires may be very violent, and likewise the aversions. Since perverse coloring of feeling is possible, there are idiosyncrasies. Owing to the predominating painful psychic state and the great number of painful sensations, such patients feel themselves to be very sick. Thus they become selfish and insensitive to the suffering of others. Occupied with their own troubles, they are dull in their social and ethic feelings, indifferent toward their duties and the well-being of their relatives. Owing to the lack of interest taken by others in their continual complaints, these patients finally come to exaggerate their sufferings and to simulate, in order to excite interest at any cost (swallowing of needles, self-infliction of stigmata, self-injury, simulation of having been the object of violation, etc.). In this their abnormally intensified imagination aids materially, and their weakened moral sense offers no obstacle to deception and lying. The affects of such patients are the most violent when they do not succeed, and they think they are abandoned and not considered. Then their ugliness and desire for revenge know no limits. As an elementary disturbance of thought there is now increased, now slowed ideation, with occasionally disconnected thought. The emotional and intellectual impressionability of the patients leads easily to imperative ideas. Weakened power of exact reproduction, associated with intensified imagination, distorts the memory and causes the patients to seem to be liars. Occasionally, at the time of the menses and at the height of affects, there may be primordial delusions of persecution.

Frequently the sexual sphere is also abnormally affected. Sexual feeling may be intensified to lust (incubus, succubus of the Middle Ages), and expresses itself in the most remarkable acts (going about naked, nymphomania, smearing with doubtful cosmetics, even urine, etc.). At times there may be again frigidity in general, or only as an idiosyncrasy toward the husband or lover. Not infrequently there are also temporary perverse sexual feelings with corresponding impulses, or equivalent manifestations of religious exaltation. The vasomotor sphere, which is always implicated, gives rise to precordial distress and attacks of fear.

The imagination of these patients is usually abnormally intensified, so that lively thought easily leads to hallucinations; or the patients are unable at least to distinguish between imagination and reality. Frequently there are also spontaneous hallucinations, and almost exclusively in the domain of sight. Their content is, for the most part, unpleasant (death heads, ghosts, fantastic animals, dead relatives, etc.). Illusions of sight are not less frequent (distorted features of persons; people seem shorter, taller, etc.); and there are also illusions of cutaneous sensibility due to false interpretations of actual sensations (snakes, toads, bugs in the bed and on the skin).

The domain of the free will seems limited on account of the weakness of will and moral feeling, the rapidity and superficiality of thought, the changed feeling, in form and content, and owing to imperative ideas; and the patient is then very often the plaything of moods, desires, impulses, and fancies. Thus it may happen that the most important duties are neglected, the most sacred sentiments wounded, and the most absurd imaginings and motives are obeyed.

Upon this psychoneurotic and more or less degenerate foundation pronounced states of insanity naturally develop. The excitability of the emotions and of the central spheres of the senses and thought, as well as the unstable equilibrium of the vasomotor functions, predispose to this. Owing to the influence of the hysteric character and numerous sensory, vasomotor, sexual, and other functional disturbances, which belong to the general disease-picture of hysteria and undergo frequent and limitless elaboration in delusions, there are psychic disease-pictures whose origin in the hysteric neurosis is immediately evident, and which therefore must be recognized by special pathology as hysteric insanity.

As in the case of epileptic insanity, we differentiate the following states and disease-pictures:—

1. States of transitory insanity.
2. Protracted delirious states, analogous to the protracted psychic equivalents.
3. Hysteric psychoses.

1. States of Transitory Insanity.

These occur after convulsive attacks of hysteria, as substitutes for them, or as independent affections.

The special clinical picture is, owing to the protean character of the neurosis, extremely variable. We observe with great frequency

states of pathologic affect, raptus melancholicus, peracute mania with erotic and religious delusions, somnambulism, ecstatic hallucinatory delirium of religious erotic content; or the content may be frightful, and is frequently demonomaniac.

Consciousness is here reduced to a dreamy state, and memory is wanting or summary.

We observe, as prodromes, globus, apprehension, depression, increased emotional irritability, and myodynias in the epigastrium.

The exciting causes are psychic impressions, recrudescence of neuralgias, and menstrual processes.

These transitory psychopathic states last from some hours to a few days. They present the features of delirium, for the most part, and are frequently complicated with tonic and clonic spasms, which may be either hysteric, hystero-epileptic, cataleptic, or choreiform (magna). Notable clinical varieties are:—

(a) Analogous to the petit mal of the epileptic: violent states of fear with disturbance of consciousness. The patients are in fear of death, furious, fear those about them and attack them in despair. Episodically there may be errors of the senses—diabolic forms, dogs that snap at the patient, ice-cold hands that wish to seize her, etc. Memory is summary.

(b) Hystero-epileptic delirium, analogous to the grand mal of the epileptic. There is unconsciousness. Memory afterward is wanting. The nucleus of the delirium usually consists of some frightful event (violation, insults, etc.), which originally caused the outbreak of the disease, that is now reproduced in hallucinations in a dramatic and allegoric manner.

The patients react to these hallucinations in desperate defense, raving, shouting, and striking about them. With this, there are choreiform and hystero-epileptic spasmodic manifestations. As a clinical variety, which is often observed in an epidemic form, demonomania may be mentioned.

(c) Ecstatic visionary states analogous to those of the epileptic. The patients here are in a profound dreamy state, the nucleus of which is extreme emotionality that may reach the degree of ecstasy with sensations of magnetic currents. Upon this basis there are developed deliria of mystic union with God or heavenly visions. The patients see Heaven open, preach with inspiration, speak in foreign tongues, prophesy, etc. At times they may reach a cataleptic state. Memory is only summary.

(d) Moria-like states, with singing, laughing, dancing, vociferating, gathering up objects, etc., which may precede for some hours a

hystero-convulsive attack. In the cases that have come under my observation there was amnesia for what took place in the attack.

(e) Cloudy states of consciousness with imperative facilitated reproduction of actual events and what has been read. The content of this logorrheic delirium is mainly made up of recent events. It is a simple voluble reproduction of the events of every day, but upon the basis of a dreamy consciousness and with only very summary memory of them.

CASE 52.—Hysteria. Ecstatic states of exaltation associated with frightful delirious states.

F., aged 24, single, maid. Her father was a drunkard and her mother suffered with migraine. Several sisters and brothers died at an early age with convulsions. The patient was nearly made blind in her early youth by inflammation of the eyes. She was neuropathic, bright, and had a very lively imagination. She had lived for many years in depressing circumstances, and she fell sick a few months ago with hysteria. Since three weeks she presented —along with marked globus, clavus, and other hysteric symptoms—delirious states: at times exalted, at times depressive. The former begin with a feeling of elevation and relief. The sensorial sphere is so intensified in activity that the patient sees before her what she thinks in such lively colors that it seems real. At the same time the pictures change with great rapidity and liveliness. The patient is a simple, half-blind peasant girl, but in these states she seems like an inspired clairvoyant. Her expression is transformed. Her movements take place with true grace. Superb visions pass before her eyes. "The prince of poets," Schiller, dead since many years, appears to her in person and talks with her. He recites his poems to her. Then she herself begins to recite and improvise with facility in verse what she has read, experienced, and thought. Finally tired, exhausted with headache and epigastric oppression, she regains consciousness of the real world, having only summary memory for her state of blessed exaltation.

As prodromes or sequels of hystero-epileptic attacks there are sometimes states of anxious delirium in which consciousness is veiled, and she is seized with violent precordial distress, and sees ghosts that prophesy disaster, faces of spirits, and caravans of monstrous animals that pass before her. At such times she feels unspeakably unhappy and wishes to die. She is being throttled. She sees her own funeral and tries, tortured by her unspeakable distress, to choke herself, and rushes restlessly and dreamily about. Usually the scene ends by an hystero-epileptic attack, from which she emerges unspeakably miserable, profoundly exhausted, with globus and urina spastica. There are numerous hysteric symptoms during the intervals.

CASE 53.—Hysteric states of exaltation, with imperative and facilitated reproduction.

W., daughter of an official, aged 16. Her father was choleric and of abnormal character. Childhood and puberty passed without notable symptoms.

The family met with financial misfortune a few months ago. The patient had much care, ate insufficiently, and overworked at sewing. She began to feel ill, to sleep badly, complain of exhaustion, nervous excitement, palpitation.

On January 19, 1878, shortly after menstruation, there were several days of sleeplessness and nervous excitement, which led up to an attack of hallucinatory delirium, and which was repeated on the 20th from 9 o'clock in the morning till 2 in the afternoon, and from 4 in the afternoon till 5.30. The immediate prodromes were feeling of pressure in the cardiac region, with apprehension, fluxion to the head, and dizziness. On February 10th, again after the menses, the attack recurred. It was preceded by a feeling of stiffness in the arms, which spread over the whole body. Then there were violent congestion of the head, dizziness, clouding of consciousness, slight twitchings in the extremities, and hallucinations. The patient heard bells, birds chirping, and saw fire. With increase of the muscular twitchings and constant restlessness, there was a peculiar state of exaltation with imperative, but facilitated, reproduction of what had been heard, experienced, or read. The intensification of memory was so great that the patient was able to reproduce a poem of over two pages which she had read a short time before. Such attacks lasted several hours and recurred twice on the following days. Since this time the patient was nervous, much excited, had a tendency to fluxions, was very sensitive to light and noises, and with very excitable imagination, so that she could not distinguish between what was read and what was actual, and when reading exciting novels fell into a peculiar ecstatic cataleptic state in which she had only confused impressions of the external world, and was in a state of clouded consciousness with general muscular stiffness.

The patient was of medium height, delicate, fully developed, of neuropathic facial expression with swimming eyes. Uterus virginal, slightly enlarged, inclined to the right. Thereafter there were palpitation, unstable vasomotor innervation, pulse varying in frequency, abnormal flushing, frequent terrors at night. On one occasion fainting attack preceded by vascular spasm. Potassium bromide, hydrotherapy, and tonic treatment had a favorable effect. The states of exaltation and convulsive symptoms did not return.

CASE 54.—Hysteria after violation. Attacks of hystero-epileptic, frightful hallucinatory delirium.

L. L., aged 18, servant, without hereditary predisposition to nervous disease, formerly healthy. Before menstruation had occurred, at the age of 14 she was the victim of an attack on the part of her adopted father. After recovering from her first fright, she felt uncomfortable. It seemed as though she was going to be very ill. She complained of fatigue; felt incapable of work. With this there was headache and troublesome pressure over the heart. Admitted into the children's hospital at Strassburg. Discharged improved after a few weeks.

Her improvement did not last. The original indefinite disturbance of the nervous system due to the psychic shock developed into a state of hysteria (vague neuralgic pains, especially in the intercostal nerves; myodynias; globus, with exacerbations of which the mood always became depressed, and there developed marked emotional irritability). During the course there were attacks of partial clonic spasms with loss of consciousness. At 17 hystero-

epilepsy (general clonic convulsions with loss of consciousness); at 18 psychic disturbances were added to the disease-picture. There was great and causeless change of feeling. With these states of psychic depression there was precordial distress at the height of which *tædium vitæ* and destructive impulses occurred. At such times she tore her clothing, demanded a knife to kill herself, wished to drown herself, and made, on one occasion, a suicidal attempt. In the course, hallucinations of hearing and sight. She heard speaking in her sleep; she heard voices that told her she would have a child; with this, visions of her adopted father, who attempted to repeat his crime. At the same time, complaint of difficulty of thought, loss of memory, confusion in the head. On admission to the emergency hospital in the beginning of October, 1872, general hyperesthesia, which expressed itself in numerous neuralgias and myodynias, together with symptoms of reduced sensibility (formication from the neck to the ends of the fingers, increased cerebral and spinal reflex excitability). Reflex contractions on touching certain neuralgic points, that increase to general trembling and weakness; causeless changes of feeling and sensation of confusion in the head; imperative fixity of certain ideas in relation to disease; hallucinations of sight and hearing. Now and then there are delirious attacks lasting from half an hour to two hours, always induced by hallucinatory visions of the adopted father who attempts to repeat his crime. Symptoms of increased reflex excitability (partial convulsions, general tremor at the slightest noise) precede. The attacks show the character of hallucinatory delirium, which is made up of an hallucination of violation and efforts to prevent it. Consciousness is lost. The patient starts in fright, defends herself in despair; movements are co-ordinated; occasionally there are finally reflex spasms (tonic and clonic convulsions), with spasmodic rolling of the eyes and grinding of the teeth. After an attack lasting from half an hour to two hours the patient comes out of it with dull headache, dizziness, great lassitude, painful myodynias, great irritability, and complete amnesia for the time of the attack. During several months of observation, the condition did not change, which indicated an unfavorable prognosis.

2. Protracted States of Hysteric Delirium.

In the hysteric there are, not infrequently, states of delirium that arise essentially out of numerous hallucinations, and which, owing to the marked clouding of consciousness, do not lead to systematization, even though some combinations of delusions and allegoric interpretation of hysteric sensations do occur.

Such abnormal states might be called hysteric hallucinatory insanity. Many cases may also be considered as protracted, or frequently relapsing attacks, of the transitory insanity of the hysteric previously described, and can be compared with the similar states of epileptics, in so far as the pictures of petit and grand mal and those of ecstatic visionary delirium upon an hysteric basis, either terminating or complicating it, make up the disease-picture. These hysteric, delirious, protracted states begin acutely, disappear suddenly, last from weeks to months, and have a pronounced exacerbating and re-

mitting course that may extend to phases of relative lucidity, and are always accompanied, during the exacerbation, by a marked disturbance of consciousness, which, as incoherence and states of clouded consciousness, may be intensified to the degree of ecstasy and stupor. It is only rarely that they are added to severe hysteric attacks and appear in the course of these. On the contrary, it is in the milder cases of hysteria that such delirious conditions occur; except occasional spasmodic stiffness, I have never seen, in the course of this delirious condition, severe manifestations of hysteria.

Protracted hysteric delirium depends upon temporary exhaustion. It develops after or in connection with profuse menstruation, during the puerperal state, and with especial frequency in the climacteric. Emotional disturbances seem to favor its outbreak. It is prone to relapse, but in eighteen cases that came under my observation it ended in recovery.

The delirium presents a mixture of the most various primordial delusions (persecutory, of sin, sexual, religious). Most frequently we find delusions of persecution, with often very violent reaction, and then, in order, come religious and erotic delusions. Hallucinations of all the senses are not infrequent. The most frequent and important are visual, olfactory, and sensory errors. The visual hallucinations are very frequently of animals, funerals, fantastic processions, in which there are indications of the dead, devils, ghosts, etc. The illusions of sight consist of continual transformation of the faces and persons of those about into masks, animals, and of changes of color. The errors of hearing are simply noises in the ear (cries, loud noises, detonations) or actual hallucinations, often of sexual content (proposal of marriage, obscene insults, accusation of child-murder). The olfactory hallucinations are of the odor of sulphur, tobacco, etc., and less frequently they are of a pleasant character (incense, perfume of roses, etc.).

The significance of this condition as hysteropathic depends upon the peculiar content of the visual hallucinations and illusions; upon the prominence of sexual delirium, and the accompanying hysteric sensations and symptoms, which frequently undergo allegoric delirious elaboration in the disturbed consciousness; upon the episodic manifestation of spasm, laughing, weeping, ecstasy, etc.

As to treatment, reference to the treatment of hallucinatory insanity will suffice.

CASE 55.—Hysteric protracted hallucinatory delirium.

Miss R., aged 25, comes of a tainted family. She was a delicate, talented, very excitable, choleric child, and as a young girl enthusiastic, intensely ideal-

istic; but she changed to the other extreme in her twentieth year. She was always very emotional, and reacted under emotional excitement with fever and hallucinations. In 1875 she had diphtheria, and thereafter was neurasthenic. Owing to emotional shock due to a death in her family, and owing to the sickness of her tabetic father, her neurasthenic condition grew worse and spinal irritation was added. In the beginning of March the patient slipped and fell lightly on her back, but she was violently frightened by the fall. Thereafter hysteria developed. She had headache, pain in the back, intercostal neuralgia, ice-cold feet, globus, feeling of floating in the air, optic hyperesthesia (seeing sparks and flames), felt electric shocks that went from the back to the head. She had attacks of crying and of fear. In July general cutaneous hyperesthesia was added. When the surface of the body was wet it nauseated her, and pressure on the head induced attacks of weeping. Then came feelings of heat and cold, sensations as if the spinal column were dry and as if there were sand between the ribs. During July transitory clonic spasms and spasmodic stiffness, with conditions of aphasia. She saw everything green-yellow, the faces of the people distorted and in various colors. The furniture seemed lengthened. No natural sleep since the beginning of June, but the family physician had used much chloral for sleep, so that when the patient came under my treatment she was completely edematous.

On July 20th hallucinations of all the senses came on, and with this a delirious state, which made it necessary to put her in the asylum in the middle of August. The patient stated that she was magnetized, that she was pregnant, that she saw innumerable spiders, bugs, snakes, heard sexual accusations, smelled bad odors; she said she was a toad, that the nurse was the Wandering Jew, that her head and brain were double, and that the saliva came from her brain; that she was syphilitic, and wished to be shot and buried.

There were no physical findings on her admission except marked anemia, edema of the face, and great loss of weight. The patient is extremely confused, given up entirely to errors of the senses, and quite unconscious of her position. The physician is King John, the nurses are princesses. She takes the physician for her husband, arranges the marriage bed, undresses. She hears her supposed husband in the cellar calling for help, says that he is being poisoned by her sisters; wishes to cut off her nose because the voices say she can thus save him. She notices worms in her food and in the bed. They come through her toes. She hears innumerable voices which constantly interrupt her thought and drive her to distorted acts, such as eating spiders and earthworms. Now and then disagreeable taste of ink, odors of dead animals, visions of corpses and frightful animals.

At the time of the menses, predominance of sexual delusions of violation, infamous accusations, and increased disagreeable odors. At the same time, numerous paralgias, myodynias, intercostal neuralgias, feelings as if the head were split and water poured into the brain—everything is done to her by means of electricity and magnetism.

With good food and care, iron, potassium bromide up to 6 grams daily and occasional injections of morphine, the patient improved during the course of November, both physically and mentally. The hysteric symptoms and the errors of the senses became less frequent. Consciousness became clear by the end of December. At the time of the menses, exacerbations. Patient hears

again several voices talking of sexual things and persecution. They told her she must enter a convent in order to save her sisters; that she would remain here in prison all her life. At the command of a voice, she sprang out of a first-story window without injuring herself.

During the course of January, she improved slowly. The patient was still mentally exhausted and neurasthenic, but free from delirium and hallucinations since February. She was sent home convalescent, and recovered during the following summer, except for slight hysteric symptoms.

3. Hysteric Psychoses.

These disease-pictures permit quite a definite separation of those that depend upon a simple, non-constitutional acquired hysteric neurosis and those that represent a transitional stage, or episodic condition, in hysteric degeneration.

In the first case we have to deal with psychoneuroses (melancholia, mania) that have a favorable prognosis, and which differ from corresponding non-hysteric cases only in their shorter course in general and the mixture and allegoric interpretation of symptoms of the hysteric neuroses.

Melancholia dependent upon an hysteric foundation seems distinguished by predominance of precordial distress, frequency of raptus melancholicus, tendency to suicide, and the frequent elaboration of hysteric sensations (especially globus, neuralgias, myodynias); by delusions that frequently have a demoniac coloring, with very frequent hallucinations of sight, and the theatric expression of the depressive emotional state, in which a certain coquetting with suffering and pain is to be noticed.

Mania seems to me remarkable for the absence of the melancholic prodromal stage, the subacute course, the great change of feeling, and especially the great instability of mood and predominance of erotic religious delusions.

Quite different is the psychosis upon hysteric foundation when it is a phase of progressive functional degeneration, which, dependent upon a constitutional and usually hereditary predisposition, arises at the time of puberty, takes on severer forms, and undergoes transformations, especially to that of hystero-epilepsy, and, unnoticed, progresses to mental disturbance. The disease-pictures under such circumstances are those of the degenerate forms,—*folie raisonnante*, moral insanity, especially paranoia and also uninterrupted progressive dementia.

Paranoia takes on a persecutory form, or it is erotic or religious. The laws of its course are the same as those of other cases upon a

different foundation. The persecutory form frequently presents transformation of the delusions (religious, erotic delusions).

Hysteria predisposes to paranoia, and especially to the form characterized by delusions of persecution, because in the sensitive patients the feeling of being neglected and disregarded easily arises; because the central sensorial sphere is easily excited to hallucination; and because the creations of the imagination and hallucinations, owing to the functional weakness, are with difficulty corrected by the higher intellectual activities. With this, when the disease is advanced, there takes place in consciousness unlimited direct transformation of sensations into delusions; and also accompanying sensations, which may reach the intensity of hallucinations, easily occur, owing to the great excitability and intensity of ideation.

The peculiar clinical features of paranoia upon hysteric foundation are:—

1. Unlimited interpretation of hysteric sensations in the sense of corresponding allegoric delusions (globus, clavus, myodynias, neuralgias, paralgias, visceralgias, spinal irritation—interpreted as persecution, usually of a physical or electro-magnetic nature; muscular anesthesias—interpreted as floating, as abnormal lightness; in combination with cutaneous anesthesia, visceral anesthesia—interpreted as removal of organs, etc.).

2. The frequency of visual hallucinations, as compared with other forms of paranoia devoid of hysteric basis (animals, death, corpses, play of color, etc.).

3. The frequency with which the delusions follow delirious episodic states that are specifically hysteric. The development of the disease under such circumstances is sudden out of such transitory delirium.

4. The predominating implication of the sexual sphere. This influence may be direct and organic, in that genital irritative processes may induce in the organ of consciousness erotic (persecutory or expansive) and religious delusions; or, when this influence is consciously recognized, it may undergo allegoric interpretation.

Cerebro-spinal sensations derived from the uterus, usually hyperesthesias and neuralgias, are interpreted in a persecutory sense (magnetic-electric). The genital sensory anomalies are interpreted as pregnancy, as relations with divine persons, or as violation. Clearly the incubus and succubus of former times, with their demoniac relations, are to be referred to this source. Even to-day, the complaints of hysteric paranoiac women in insane asylums of nightly violation are quite usual. By reflex uterine stimulation of

the optic and auditory centers, corresponding hallucinations are frequently observed (sexually insulting and pleasing voices, obscene and religious visions); but similar hallucinations are especially frequent in the olfactory domain. The content of olfactory hallucinations is, for the most part, unpleasant—foul odors, sweat as the object of disgust on the part of others, or as signs of persecution by them (with interpretation of feelings of numbness, fainting spells, etc.); infrequently olfactory hallucinations are pleasant (in religious paranoia, the odor of flowers, incense, etc.).

With the oncoming of paranoia, usually the severe somatic symptoms of hysteria, especially convulsions, diminish.

The ecstatic and even cataleptic states very frequently accompany the further course of erotic and religious paranoia. The malady shows a tendency to long remissions and even to intermissions. At the height of the disease exacerbations are almost always associated with menstrual processes.

The prognosis is unfavorable. Potassium bromide and morphine usually ameliorate the sensations and states of excitement arising from the uterine nervous system, and quiet the patients.

CASE 56.—Original paranoia on an hysteric basis. Transformation through hysteric delirious states.

Marie W., aged 42, single. Father was a drunkard; mother was very choleric, having had several attacks of insanity. Several brothers and sisters died of convulsions. The patient was found near Gratz in a cave, where she had gone because she felt hurt that no one had given her recognition and sympathy.

From childhood she was neuropathic, suffered much with headache, felt that she was not treated like the other children, and put aside by her parents. She soon began to think that they were not her real parents. In her fourth year an unknown gentleman on the street asked her in joke if she did not wish to be his daughter. This made a profound impression on her. When she came home her mother whipped her and smashed her nose in order to make her unrecognizable. Then she was very sorry that she had not gone with the gentleman. She became so moody and depressed that she thought of ending her life by drowning. It is said that the menses began at the age of 8, disappeared for two years, and thereafter recurred irregularly, and always with pain in the abdomen and back. On their first appearance the patient had felt peculiar anxiety, numbness, desire to sleep, and fatigue. While she was still going to school she once met a strange family that was passing the summer in the village. The lady was friendly to her, and even made her presents. She felt drawn to her, and it seemed to her that she was her real mother.

In her thirty-third year the actual disease began. The patient at that time was suffering with hysteria (globus, hyperesthesias, etc.). She began to notice that people spoke incomprehensibly, that everybody looked at her, and

that all were cruel and murderous in their attitude toward her. They tried to poison her. She knew this because her abdomen became so bloated (hysteric meteorism).

In her thirty-fourth year it was revealed to her (hallucination) that her so-called parents were not her parents. After that she called them only foster-parents. For a long time her lack of resemblance to her brothers and sisters had struck her. Now it was also clear why she had always been the Cinderella in the house. It was also brought to her knowledge that in her first year she had been stolen from her parents by a band of Jews. She had later come to recognize this band by the sense of smell. In the beginning of the disease evidently there were hallucinatory, delirious hysteric states which led to the further development of delusions. Thus she lay in a sea of fire, and later in a tomb. She knew this by the odor of corpses. On coming out of a lethargic state she heard some one ask whether she were living or dead. She had said that she was living. She heard then another voice telling her to feel on her head. She noticed that there was a crown there, but she was unable to speak. She noticed also that an attempt had been made to poison her in order to conceal her high position and steal her inheritance.

In another psychic exceptional state she once heard the words "royal beast" and noticed that this curse was directed against her and the archducal family. In later delirious states matrimony had been proposed to her. She saw no one present at the ceremony, but she heard everything. She was made to sit up in bed and forced to say yes, the first time in a promise to a certain W.; a second time to the emperor; a third time her voice deserted her. She also read about this in the newspapers, but usually in doing this it grew black before her eyes; however, on another occasion, as she looked more intently at the newspaper, she saw it there in golden letters. In her hysteric sleep and states of catalepsy she had been violated and made pregnant. She had had, however, one (actual), two small (abortions), and three large confinements (imaginary). The latter had been concealed by stealing the children. She had been treated in a hostile way by everybody. It was particularly her tyrannic foster-mother who had struck her, tramped on her, torn off the end of her nose, and rendered her thus unrecognizable and so different from her noble and legitimate mother. She now looked quite different; her sleep was strange and no longer refreshed her. Until lately she had been persecuted, pushed aside, although in reality she should have the highest place in Gratz. It was only in her last service that the lady had been kind and good. She noticed from her resemblance to this lady that she was her actual mother. She had noticed all the conversation referring to the lady while in her home, and had found that her real mother was named "Full Moon, Glad Sultan" and that she was really a queen. At this place she also often felt a crown on her head; but when she reached for it at the command of voices the crown had been taken away.

The patient is of medium height, of brachycephalic skull. The broad root of the nose lies deep and seems to be pressed in. The right ear is smaller than the left. The patient suffers with numerous hysteric symptoms, which occur especially at the time of the menses. Her manner is that of proud reserve. She lives entirely in her romantic, persecutory, and grand ideas, which she reveals only while in affects. The disease-picture is absolutely stationary.

CASE 57.—Hysteric paranoia (sensations).

H., aged 39, widow of an official, admitted October 7, 1875. She is said to have no hereditary predisposition. A sister subject to spasms. In her fifteenth year, with the beginning of puberty, the patient became chlorotic and hysteric. Traces of the hysteric neurosis can be discovered through the whole of her life since that period. The patient was married, but never cohabited. Three years ago the patient became suspicious and thought that she was watched, maligned, and despised on various sides. She hid her money, and she was told at night where she had hid it. She noticed disappearance of money and valuable papers. Her food was poisoned and parts of her limbs were removed (temporary anesthesia). She moved from one house to another, and was always in quarrels with her neighbors, to whom she attributed her persecution. Two years ago numerous hysteric sensations and hallucinations came on, the location and content of which clearly indicated excitation in the genital system. She was called harlot, obscene proposals were made to her, and her strength was sucked away from her. The peculiar designation which the patient gave to her various sensations, partly dependent upon the formation of new words, is interesting. All her troubles are brought about by a secret force which she called *zeif*. She describes the mode of her sensations by adding the syllable *zeif* to the name of the organ in which she has the sensation (larynx-, liver-, stomach- zeif, etc.). Among other troublesome sensations there was the feeling of having her strength sucked out through the anus, the sacrum, and the vagina. This occurs only occasionally, but it goes on until she is benumbed, as if drunk, and cannot see. Her anus is absolutely destroyed. There is always a sensation there (stretching of the anus). The sucking in the vagina has existed since she was examined by the physician. This sensation of sucking is very unpleasant; and even when she does not feel it her genitals are painful.

Sometimes there is a sucking sensation in the head and the stomach. The thoughts are sucked out of her head. This is easy, because her whole head is open. When there is sucking, she feels a painful drawing in the head. This process is kept up until she is absolutely worn out. Whenever the nurses go out, they suck all her juices out in order to commit debauches in town.

She is all filled with acrid vapors, and describes this feeling "as if poison were breathed into her through the walls." Through the wall she is aspirated in the sacral region. Her heart is cut to pieces, her head is split (congestion), and her brain is drawn out through the nose (occasional cold). She is cut, stabbed, and drawn on in the loins and hips (intercostal neuralgia).

Her thoughts are drawn out of her, and because, in this she experiences a pricking, boiling feeling in the scalp, she calls this procedure *dackensud*. The same process is carried on with her head *(daken): i.e.*, it is used for mental work by others, a process which she calls "doctoring." She is also subject to *tendendengs: i.e.*, other thoughts are put into her head.

An especially unpleasant sensation is that of the crawling of ants along the back, which begins in the hair at the back of the head and descends. She therefore calls it *hairdack*. She also feels shaking and trembling in the whole body. She is then *durchgezeift*. Sometimes she is made dead temporarily throughout the right side. She has crabs in the body, which eat up everything in her. She is purely the object of low joking.

With these hysteric sensations that are interpreted in the paranoiac sense there are also numerous hallucinations which of late years have taken on more and more a sexual coloring. She hears sexual insulting words. Those around her evidently have tongue- and tooth- zeif. The patient hears her thoughts spoken aloud. She is called secretly "harlot"; the nurses say that she is probably a *papess enceinte* since a long time. She is the object of shadow-play. At night her vagina is fussed with. She is overshadowed by the bishop, who throws a cloth over her face at night. Olfactory hallucinations also are not wanting. Foul odors are driven through the walls into her nose.

As reaction to this misery the patient is almost constantly in unrestrained, angry excitement that leads to acts of violence toward those around her, from whom all is derived. At the time of the menses, when sensations and hallucinations are intensified, the patient is especially excited and also sleepless. It is only possible to occupy her and distract her temporarily. Potassium bromide and injections of morphine have only temporary effect. Aside from the severe hysteria, the most careful examination reveals nothing besides chronic uterine and vaginal catarrh with abundant leucorrhea, conditions which certainly were very important from an etiologic standpoint. Gynecologic treatment could not be carried out with the patient.

CHAPTER IV.

Hypochondriac Insanity.

THE discussion as to whether hypochondria should be reckoned as a neurosis or a psychosis should be, all things considered, decided in favor of the latter assumption. Concerning the place of hypochondria in the psychoses, there are differences of opinion. Griesinger regards it as a mild form of melancholia. Actually, psychic pain and signs of inhibition are observed in the hypochondriac; but they are not primary, rather secondary manifestations—a reaction to troublesome general sensations, paralgias, etc.; and out of these develop apprehensive ideas which, like imperative ideas, do not permit others to rise, and they force the patients continually to occupy themselves with the disturbed processes taking place in their bodies.

This forced preoccupation is explained in part by the physiologic influence of the mode and manner of bodily feelings (general feeling) upon emotion and idea; in part, by the content of the ideas which fill consciousness, in that they are concerned with serious disease and danger to life. Essentially, hypochondria may be called a sensory neurosis (neurosis of general feeling), with reactional implication of the psychic sphere, which is never wanting. If tem-

porarily consciousness is no longer occupied with the abnormal disturbed general feeling, owing to subsidence of the sensory neurosis, then inhibition and depression disappear.

In this, hypochondria differs from hypochondriac melancholia, in which the primary painful depression and the inhibition (with possible delusions of littleness and sin), with a profoundly disturbed state of general feeling (usually based upon special causal or accompanying physical disease), occur together, and the latter is used in attempts to explain the abnormal depression and inhibition.

Hypochondria has numerous points in common with neurasthenia, in that not infrequently the latter neurosis is the somatic foundation and point of origin of hypochondriac depression and delusions. Essentially, however, the two states must be separated, for not always is the hypochondriac a neurasthenic nor the neurasthenic a hypochondriac, even though it must be admitted that the neurasthenic is almost always nosophobic.

The Hypochondriac Neuropsychosis.

The most important elementary manifestations on the psychic side of the disease-picture of hypochondria are: A facilitated power of apperception of the psychic organ, as a result of which the exciting processes (often causal) in the nerves of other organs, usually with abnormal changes in the organs, become clearly conscious. At the same time they become intensely colored by lively feelings of displeasure, which may attain the degree of affects (psychic hyperesthesia). Consciousness is not only constantly disquieted by these painful feelings and entirely occupied with them, even to the degree of inhibition of all other feelings and ideas, but also forced to interpretations of them, which, according to the individuality, the state of consciousness of the patient, as well as the kind of the causal physical disease, may extend from ideas of severe disease to the most absurd interpretations of sensations that are actually experienced.

In this constant readiness for allegoric and often absurd distortion of sensations, explicable as due to inhibitory processes which affect all thought, and in consequence critical power and reflection, as well as in the largely original illogical character of the patient, the hypochondriac resembles the paranoiac. With Merklin, we are not unjustified in calling hypochondria, on account of these facts, a mild form of paranoia that is compatible with an external show of reason. The transitions from hypochondria to certain hypochondriac states of paranoia are easy. At the height of hypochondria reproduced concepts are also colored with lively feelings, which may attain the degree of affects, and a state of sensorial hyperesthesia develops in which ideas call up corresponding sensations (hallucination of general sensibility). The effect of inhibitory processes shown in the continued and increasing organic sensory influence upon consciousness is seen in all directions of mental activity. With reference to intelligence in general, it is remarkable that the allegories and interpretations of sensations grow more and more absurd. In thought

and feeling, as a result of inhibition of pleasurable sensations, desperate psychic anesthesia arises, which also affects the sense-perceptions; owing to inhibition of ethic ideas and feelings, in association with the painful state of the ego, egotism develops; owing to the absence of ethic feeling and ideas causing lack of sense of propriety, all possible physical functions are carried out or discussed before others. Inhibition of the general activities is shown in despairing apathy and lack of energy.

The hypochondriac has but one object in life, one thought: to find relief for his fancied frightful malady. With this in view he consults one physician after another, swallows prescription after prescription, subjects himself to all possible forms of treatment, and as a result is more reduced, is made sick by drugs, and finally resorts to homeopathy, quackery, and mysterious cures—but all in vain. His troubles grow worse with the increasing hyperesthesia that spreads to all sensory areas; his abnormally excited imagination conjures up for him the most frightful pictures of disease which immediately make their impression upon the physical condition by calling up corresponding sensations. At the height of his malady he is incapable of occupying himself with anything other than the processes taking place in his diseased body, seeks in his excrement for tapeworms, takes the papillæ of the tongue for the beginnings of cancer, finds tubercle in his sputum, and sees evidence of stone in the sediment of his urine. Harmless efflorescence on the skin is a proof of syphilis; palpitation is a sign of threatening cardiac paralysis; neurasthenic symptoms point to tabes; pressure in the head and headache are absolute proof that softening of the brain is coming on, etc. The patient is in constant emotional excitement and imagines the sufferings of inevitable frightful death. At times, as complications, there are spontaneous feelings of anxiety. They may become intensified to raptus and lead to suicide.

In part causing and in part accompanying hypochondria, there are many nervous symptoms,—hyperesthesias, neuralgias, paralgias, paresthesias, and occasionally also anesthesias of the spinal, cerebral, and sympathetic nerves, hyperesthesia of the sense-organs, and episodically even hallucinations; not infrequently, also, the symptom-complex of cerebral and spinal neurasthenia. Motor disturbances (reflex spasm, respiratory spasm, globus, vasomotor and secretory disturbances) are not infrequent.

Hypochondria is a very frequent malady, especially in men. Episodically and in a mild form it may affect any person whose general feeling is disturbed by physical disease; but such cases are without significance in comparison with those in which it is a constitutional neurosis, having its origin in hereditary predisposition, which, when it begins at puberty, or even in childhood, continues throughout the life of the individual, in that it is awakened by all possible organic or psychic causes (biologic phases of life; chronic diseases of the alimentary tract, of the liver, of the heart, of the sexual and urinary organs, often quite harmless in nature; neurasthenia, *ennui*, life in boarding-schools, association with hypochondriacs, reading of certain popular medical writings, epidemics). Like all neuroses, hypochondria presents a remitting, exacerbating course, often referable to internal and external influences.

When not based upon hereditary taint, hypochondria is usually temporary, and ends in recovery after a few weeks or months. Constitutional hypochondria presents only intermissions, and not infrequently ends in serious states of degenerative mental disease.

Cases in which hypochondria presents itself as a complication in the course of a severe brain disease (*vide* "Dementia Paralytica") are not to be confounded with the disease-picture of hypochondria as an independent neurosis. From the standpoint of treatment, it must be kept in mind that hypochondria is always dependent upon a physical disease, which must be found and treated. In practice this is much sinned against, for the hypochondriac is taken to be an imaginary invalid. Strictly speaking, there is no such thing as patients imagining disease, but only patients who exaggerate their malady owing to abnormal sensations (hyperesthesia) which are not in accord with objective conditions, with the consequent egotism and exaggerated invalidism. The sensations of the hypochondriac are not imaginary. Their delusions are no more devoid of a somatic foundation than are those of so many other psychic invalids, but the interpretation is insane and often absurd.

The treatment of the hypochondriac must be both mental and physical. Mental treatment of the hyperesthetic patient must be principally directed to quiet, distraction, and amusement.

The fundamental condition for mental treatment is that the patient have faith in his physician. By sympathy and consideration of the patient's troubles, and careful physical examination, we seek to obtain this. Once acquired, we can then proceed forcefully; certainty and consequence of manner impress the patient, ridicule embitters him; like the paranoiac, he is not amenable to logical proof of his errors.

Psychic distraction by well-ordered activity is extremely important. Many men fall ill in this way by changing from an active to an inactive life. Ordered activity or occupation, however, must not be a tax upon mind and body, nor should it be merely mechanical, purposeless, and tiresome. Often short pleasure journeys, water-cures, gymnastics, writing, etc., prove useful. At the height of the disease owing to the general hyperesthesia, rest, or even temporary rest in bed, is necessary.

Drugs find their psychic indication also. Without medicines the hypochondriac is not calmed. If there be no somatic indications for medication, then placebos should be given. In doing this the patients are not made drug invalids.

The starting-point of somatic treatment lies in the causal or accompanying physical diseases (sexual troubles, affections of the alimentary tract, neurasthenia), the treatment of which is to be carried out in accordance with the indications; and it never should be routine, but adjusted to the individual constitution, the circumstances of life, and the mental needs.

There is a great obstacle in carrying out logical treatment in the mental condition of the patient, who is often also originally mentally abnormal. Weakening cures, prolonged administration of salts, and cures at Carlsbad, which have a profound effect upon tissue-change, as a rule are not borne by the constitution and nervous state of the hypochondriac (irritable weakness, neurasthenia).

In general, hydrotherapy, electrotherapy, climatic cures, sea-bathing, with tonics give better results. Symptomatically, quieting drugs may be necessary at times, especially where there is extreme hyperesthesia with sleeplessness and attacks of fear. Under such circumstances, preparations of the bromides and hydrocyanic acid are first to be tried. In general they are better borne than opiates.

States of Mental Weakness Developed from Hypochondria.

In severe and generally in constitutional hypochondria states of mental weakness often constitute the terminal phase or a phase of progressive development.

These conditions must not be confounded with the hypochondriac form of dementia paralytica. They do not go on to complete dementia. The patient sinks into a despairing state of apathy and abulia, which is but occasionally and temporarily interrupted by feelings of fear of organic origin. The affects and the effort of the patient to find help diminish. His interest in the world and in things formerly prized disappears. He loses the last trace of esthetic regard for others, grows dirty in habits, reckless in the satisfaction of his bodily needs, occupies himself only with the troubled functions of his invalid body, acquires all kinds of crazy habits, becomes childish in his expression of any emotion, and sillier in the description and interpretation of his sufferings. In time his features relax, and a marasmus comes on in which evidently the brain is the part most affected (senium præcox).

Case 58.—Mental weakness due to hypochondria.

J., physician, aged 54, married for many years to an hysteric, insane wife. Family predisposed. He had always been of an abnormal, eccentric, irritable, impossible character, inclined to hypochondria. On account of the sickness of his wife and his hard life in his calling in a mountainous region, he had many cares and troubles. His invalid wife and competition interfered with his receipts. In 1879 the patient acquired a chronic gastro-intestinal catarrh. He became sleepless, hypochondriacally depressed, much reduced in weight, and had attacks of fear, in one of which he made an attempt at suicide.

On August 8, 1879, he asked to be admitted to the psychiatric clinic. Subcutaneous fat quite absent, gray-yellowish color, anemia, chronic gastro-intestinal catarrh, signs of beginning fatty heart, slow pulse, signs of beginning senility (gerontoxon, rigid arteries) were the physical findings. Mentally he presented the picture of a severe hypochondria, and complained that his general feeling and mental feeling were absolutely paralyzed. He felt that he was without feeling and emotion, and complained, weeping like a child, that he could see no salvation ahead of him. With this, a feeling as if his head were as large as a pumpkin. Numerous paralgias (feelings as if worms and other vermin were gnawing the skin); feelings as if he had a leaden ball in his abdomen, as if he were about to be confined, as if the intestines were wounded or pinched in a vise, burning in the rectum going up to the brain. After eating, and also at night, the patient felt fearful distress in the precordial region. He thought he was about to die, and asked to have a telegram sent to his relatives. In this crisis the patient had globus, respiratory cramp, sweating from fear, and complained of cramps in the hands and feet. Occasionally, in such apprehensive attacks, he sees the angel of death, who wishes to carry him off.

He clings in despair to those about him, rolls about on the floor, crying in despair for help.

The malady presents remissions and exacerbations; the latter always occur in connection with intensification of the intestinal trouble and lack of stool; often, too, in connection with errors of diet to which occasional bulimia leads, as well as in connection with smoking, to which the patient abandons himself against orders.

Everything is used in the way of food and medicine to bring about a favorable change in the condition, which is essentially one of chronic gastro-intestinal catarrh associated with the malady, but in vain. In states of anxious excitement, opiates, laurel-water, sodium bromide, and baths sometimes have an ameliorating influence. Temporarily the mental and physical condition improves under strict milk diet and cessation of smoking; but the patient always disobeys the dietetic orders, takes the food of others, and increases his weakness with renewed exacerbations.

The patient gives himself up entirely to his sensations, and complains like an hysteric woman of innumerable pains. There is no longer a drop of healthy blood in him. He has not a single healthy organ. He is reduced to skin and bones. His flesh has fallen off. He cannot stand it much longer. The heart breaks in two, and his thread of life breaks. He feels as if worms were gnawing his brain, and he feels the loss of mental power. At times he feels his body devoid of blood, the circulation stopped, and he feels the anemia of his brain and the marasmus. His head moves backward and forward, and he has a partial eclampsia. His feelings change every instant. Anxiety, fear, depression, cardiac oppression. He has no more thoughts; cannot write a letter. His nerves are irritated and have an inimical effect upon him. He has no more vital force, and he is hastening to his end. He prefers death to this martyrdom; but at the same time he fears death and asks that he be anesthetized in his hour of agony. The point of origin and nucleus of all his disorders of sensation are abnormal gastro-intestinal sensations.

The patient complains of such hyperesthesia throughout the alimentary tract that he is constantly conscious of the process of formation of feces and peristaltic action. He imagines that his brain is in his abdomen and his intestines in his brain. He has a constant feeling as though the intestines were injured. The rectum burns like fire. From there a painful feeling rises to the heart, and from there to the brain. In the latter he has a feeling as if a hand were griping him, a spasm of the hemisphere. However, it must be an idiopathic malady, the patient says with a cavernous voice. When evacuation is retarded, he feels frightful atony. He then feels the gases mount to his heart, and expects his heart to stop.

In the course of the year 1880 the patient is more and more given up to his troubles, and becomes dull to external matters and indifferent to his relatives. His former interest in business questions disappears, and he asks no longer for the newspapers and books, and occupies himself only with heart-beat, pulse, tongue, evacuation, urine, and sees in all signs of his approaching death.

Toward the end of 1880, with signs of increasing mental weakness, he becomes weeping, hopeless, brooding, and childish; silly emotion; there is noticeable physical marasmus. His face becomes sad, wrinkled, old. The patient gives himself up to monotonous complaints of general atrophy, diminution of specific gravity, atony, and sclerosis in the abdomen. The suspicion at

first entertained, that the condition was an hypochondriac picture in a case of dementia paralytica, is not confirmed; only a lasting dilatation of the right pupil was observed in the course of the year 1880. When I saw the patient for the last time, toward the end of October, he presented a simple state of hypochondriac mental weakness, which, when the evacuations were retarded, was enlivened by violent feelings of anxiety that increased at times to the degree of despair.

In the beginning of 1881, in such an attack of despair, he committed suicide by breaking a window-pane of so-called indestructible glass and inflicting deep wounds with pieces of the glass, so that death occurred from hemorrhage.

A further possible termination of hypochondria is that of hypochondriac paranoia.

While in simple hypochondria the anomalous sensations are still logically considered, and the patient still thinks of his troubles as lying within the possibilities of actual disease-states, in its further course not infrequently it happens that, with the loss of the last vestiges of reason, the patient arrives at absurd physical and medically impossible interpretations of his sensations. The facility with which, under such circumstances, sensations are transformed into ideas of a delusional character, as, on the other hand, ideas give rise to sensations, favors the development of this simple form of hypochondriac paranoia. Then hallucinations further aid, as a rule, in the formation of the delusions. The transitions from hypochondria of a character more or less reasoning to this form of paranoia are easy. In other cases, with the patient's loss of critical power, hypochondriac paranoia arises out of the circumstance that the sensations are projected into the external world and ascribed to hostile influences (persecutory form). In these cases, also, the further development takes place in obedience to hallucinations, as in the ordinary form of paranoia.

PART FOURTH.

Chronic Intoxications.

CHAPTER I.

Chronic Alcoholism and its Complications.

We include under the name chronic alcoholism (drunkenness), introduced by Magnus Huss, all lasting psychic and physical disturbances of function which are caused by the habitual abuse of alcohol.

The anatomic substratum of the psychic symptoms of the disease-picture are chronic inflammatory changes in the meninges and atrophic processes in the cerebral cortex due to the chemic effect of alcohol and its products of decomposition upon the cerebral tissues, as well as to the congestion and stasis in the vessels and the stasis in the lymph-channels of the brain and its membranes.

As results or complications there are: anomalies in the distribution of the blood (hyperemias and anemias), hydrocephalus externus and internus, hyperostosis cranii, and pachymeningitis interna; in other organs there are arteriosclerosis, hypertrophy of the heart, fatty heart, chronic gastro-intestinal catarrh, degeneration of the liver and kidneys.

The organic changes in the brain and its coverings mentioned occur only after a long time and not in every case. They appear as terminal manifestations and as the remains of original nutritive disturbances of the cerebral cortex (disturbed nutrition and circulation as a result of the abuse of alcohol); and it seems that with a brain having resistive power (intact vascular walls) the picture of drunkenness may for a long time remain merely that of a functional disease. This explains the possibility of recovery in the early stages.

As a result of this, the toxic psychoses, and especially alcoholism, form the natural transition from the functional to the organic psychoses, and they here find their logical consideration, with the exception of the infrequent forms of intoxication which have already been described under etiology (page 192).

1. The fundamental character of the psychic disturbance is: psychic weakness and the progressive insufficiency of the ethic and intellectual functions.

(a) As a rule, the first symptoms manifest themselves in the ethic sphere. The drunkard has manifest lax principles in regard to honor, morality, position, and indifference to moral questions, to the

ruin of his family, and the contempt in which he is held by his fellow-citizens. He becomes a brutal egotist and cynic (drunken degeneration of moral feeling and temperament; *inhumanitas ebriosa*—Clarus).

(b) With this there goes, hand in hand, an increasing emotional irritability, a true tendency to violent anger. The slightest causes induce dangerous affects or outbursts of rage, which, owing to the advanced weakness in the ethic sphere, are uncontrollable and present the features of pathologic affects *(ferocitas ebriosa)*.

(c) At times, especially in the morning, there are states of profound mental depression and bad humor that may reach the degree of *tædium vitæ*, and which temporarily disappear under renewed indulgence in alcohol *(morositas ebriosa)*.

(d) An early manifestation in the psychic domain is a remarkable degree of weakness of the will toward the fulfillment of the duties of occupation, and especially those of citizenship. These show themselves most clearly in the impossibility of carrying out good resolves, of giving up the vice, which find their most striking illustration in those rather frequent cases of alcoholics that ask to be placed in an institution; for they are still intelligent enough to notice the abyss at the brink of which they find themselves, and are at the same time conscious of the weakness of will and moral feeling that makes it impossible for them to avoid indulgence.

(e) With these symptoms finally there is a progressive diminution of intellectual power *in toto*, which early shows itself in weakness of memory, difficulty of thought, and dullness of apperception, which may even progress to complete dementia.

(f) A striking symptom in the majority of cases is the delusion of chronic alcoholics that stand in sexual relations, of being sexually deceived, whether it be by the wife (delusion of marital infidelity) or by a mistress (delusion of jealousy).

I have found delusions of jealousy in about 80 per cent. of male alcoholics having sexual relations. It arises in the later stages of alcoholism, and with few exceptions is an isolated quasi-monomaniacal delusion.

Owing to this, and also to the fact that it arises almost exclusively ideationally (by combination), at first sight it does not create the impression of a delusion, and even for the mental examination it is often necessary at first to investigate the question of the reality of the facts in order to ascertain whether the idea be a delusion or based upon facts.

When this jealousy has once arisen, it is extremely fixed, and only exceptionally have I seen it disappear with the recovery from alcoholism. This explains the fact that it is observed in the various forms of mental disturbance, acute and chronic, which develop upon the foundation of alcoholism.

But it existed before the outbreak and was not the product of the episodic or complicating psychosis. The delusion belongs to alcoholism *per se;* it is a stigma of alcoholism as a mental symptom, and of primordial origin.

This does not prevent its being furthered occasionally by hallucinations and illusions of corresponding content. These, however, are subsidiary and belong to episodes of drunkenness, affects, or delirium.

The question with reference to the manner of origin of this delusion is a difficult one to answer. Without doubt it is related to alterations of feelings and functions in the genital sphere. Only careful mental and physical exploration of the patient, with a history of the sexual relations with the wife, can throw light upon the pathogenesis of the delusion.

It is to be remembered that the abuse of alcohol in the beginning, and for a long time thereafter, has a temporary aphrodisiac effect, and intensifies the excitability and excitement of genital centers, until, in obedience to physiologic law, the terminal opposite phase of exhaustion and loss of the function comes on. In a number of cases in which I was able to investigate the circumstances, there was always a condition of hyperæsthesia sexualis. The abnormal impulse was intensified in the first period of alcoholism, but in the performance of coitus the man failed to find satisfaction, because the feeling of lustful pleasure was wanting.

On the part of the wife, who accommodates herself to the act only with reluctance, there is a cause of absence of satisfaction to the husband in her want of sensual pleasure.

The causes of the coldness of the wife are advancing age, aversion to the rough, brutal husband, often drunk at the time of intercourse, who lives with the wife in an unhappy, contentious state. Aversion to intercourse results also from the pathologically tardy ejaculation, which causes pain, through the persistent and frequent attempts. In the later stages of alcoholism it is fortunate if the man becomes absolutely or relatively impotent.

These are the psycho-physical elements out of which the delusions of jealousy develop as soon as, in the course of alcoholism, a certain degree of intellectual and ethic weakness has come on.

The brutal, irritable, mentally enfeebled husband, who otherwise lives in a state of quarrel with his wife, seeks and finds the cause of his sexual dissatisfaction in the infidelity of the wife. The delusion becomes fixed and elaborated purely by means of false combinations. The children do not resemble the father; therefore they are not his. In the household there is privation because the husband spends everything in drink; therefore the unfaithful wife gives money and food to her lovers. The wife takes care of her personal appearance for innocent reasons; therefore it is because she wishes to please others. These are the essential elements of the delusion. Only in affect, intoxication, or occasional delirium are illusional or hallucinatory perceptions experienced (loving glances, obscene language on the part of the wife, sight of her *in flagranti*, surprising in rendezvous, mistaking of persons, etc.).

The mental and ethic enfeeblement of the drunkard explains the fact that he often takes the father, the son, the brother, etc., to be the guilty person.

2. Next to the psychic phenomena come sensorial disturbances as early symptoms of chronic alcoholism. In large part they depend

upon circulatory disturbances in the brain (chronic hyperemias), and express themselves in headache, dizziness, heaviness, mental indisposition, confusion, mental embarrassment, and restless sleep with agitated and anxious dreams.

3. The sense-organs present important disturbances. They are, in part, referable to circulatory disturbances, and consist at first of hyperesthesias and elementary subjective sense-impressions going to the degree of hallucination; later, of anesthesias.

Sight is most frequently implicated; then hearing. The phantasms consist of mouches volantes, sparks and flames, the subjective sounds of roaring, ringing, and hissing. These not infrequently are accompanied by evident acoustic hyperesthesia. From the phantasms and tinnitus very frequently illusions develop that are erroneously called hallucinations. Actual hallucinations also occur, at first immediately before going to sleep, later episodically throughout the course of the disease after weakening influences (want of alcohol, disturbed sleep, insufficient food, etc.).

They depend, in a large part, upon anemia of the central sense-organs, are almost exclusively visual, rarely auditory, and have, for the most part, a frightful content that induces fear (horrible masks, specters, animals, etc.).[1]

In the course of the malady, as Galezowski and others show, there may be amblyopia. It comes on suddenly, and the acuteness of vision diminishes decidedly. The patient becomes myopic and sees better at night.

Now and then, as a result of spasmodic affection of the muscles of accommodation, there is diplopia and polyopia, and not infrequently temporary color-blindness is observed. The pupils are dilated and frequently unequal. The ophthalmoscope shows nothing more than extreme edema of the retina and narrowly contracted arteries.

The visual disturbance may disappear in a few months, if the abuse of alcohol is stopped. This rarely happens, and therefore the result is atrophy of the optic nerves, with amaurosis.

4. Very early in alcoholics the integrity of the motor functions suffers.

The most important, earliest, and most frequent lasting disturbance is tremor of the voluntary muscles.

It is most marked in the tongue, lips, face, and hands. However, the tremor may temporarily increase to general tremor. Nystagmus also is not

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[1] These phantasms are, for the most part, multiple (fantastic animals, murderer with drawn dagger, etc.). During a long time one of my patients had at night before going to sleep visions of two men dressed as policemen armed with bayonets. They asked him who he was and demanded his money. Later, they followed him in the street in the daytime step by step, so that he went to the police for protection. Illusions also occur here, such as seeing those around coal-black, in distorted form, or as the devil or an animal.

infrequently seen. Diagnostic of this alcoholic tremor, associated with its form and the manner of its distribution, is the circumstance that in the sober state it is most intense and diminishes with indulgence in alcohol. Not infrequently, even in the beginning of the disease, as a result of increased reflex excitability of the spinal cord, there is general twitching and local tonic cramps in the calves. They occur especially at the time of falling asleep, and with the phantasms are the principal cause of the difficulty these patients experience in getting to sleep.

In the advanced stages of chronic alcoholism there are signs of paralysis in the facial domain, as well as in the extremities. The hands become weak, the knees bend, the gait becomes shuffling. The cause of these motor disturbances is not yet known, but in a certain number of cases it lies in disease of the peripheral nerves (polyneuritis).

5. Sensory disturbances are very frequent in advanced chronic alcoholism.

In the beginning these consist of hyperesthesias and neuralgias. The hyperesthesias may be cutaneous or muscular. Indeed, Magnus Huss describes a peculiar hyperesthetic form of chronic alcoholism. As a rule, the hyperesthesias are not general, but limited to the extremities. They probably cause, owing to the increased excitability of the reflex apparatus of the spinal cord, the spasmodic contractions resembling lightning-like electric discharges, and the tonic cramps of the muscles of the calf.

In the final stages of chronic alcoholism, analgesias and anesthesias are observed. They are usually limited to the forearm or merely the fingers, or to the lower extremities as high as the knee; but they may also affect the trunk. Magnan has described a hemianesthesia of the drunkard as an especially severe form of anesthesia. Sometimes slowness of apperception has been observed with intact sensibility.

These numerous abnormal sensations are not infrequently interpreted in an allegoric way by the clouded consciousness, and thus become the basis of delusional ideas. Thus the neuralgic, lightning-like pains lead to the delusion of being tortured with electricity; the paralgic and hyperesthetic sensations lead to the idea that snakes and insects are crawling on the skin, and cause such patients constantly to wipe off the skin and shake their clothing.

6. In addition to the disturbances of the circulation due to arteriosclerosis, fatty heart, etc., general disturbances of the circulation appear early in alcoholics. There is vascular paralysis, which shows itself especially in dilatation of the vessels and slowness of the circulation in the face, and in stasis in the lymph-channels, causing trophic disturbances of the skin (acne rosacea). With this there is a slow and usually infrequent pulse. The weakened brain, with paretic vessels and incapable of resistance to congestion, is less and less able to bear alcohol, and relatively slight indulgence in alcohol immediately leads to fluxionary hyperemias, with symptoms of pressure and irritation (*vide* "Pathologic States of Drunkenness"; *comp.* page 214).

7. An early phenomenon in drunkards is diminution of libido sexualis and of sexual power, even to impotence.

8. The profound disturbances which the vegetative organs undergo as a result of the continued abuse of alcohol, find their expression in premature

senility, especially in trophic and circulatory disturbances, which induce atheroma of the arteries, paralysis of the vessels, fatty heart, chronic gastro-intestinal catarrh, and degeneration of the liver and kidneys. The withered, discolored, pale skin; the cutaneous anemia with capillary dilatation and venous stasis; the tired eyes with dilated pupils and expressionless glance; the demented mien with unstable facial innervation, that may be paresis or paralysis; the relaxed vacillating attitude,—betray the psychosomatic degeneration of the alcoholic.

The course of chronic alcoholism is progressive to the most extreme degrees of psychic and physical decadence: stupidity, paresis, and physical decay.

Rarely does a drunkard reach this final stage, for the accompanying diseases of the vegetative organs, especially cirrhosis of the liver, dropsy, uremia, apoplectic or epileptic attacks, acute inflammatory affections (especially of the lungs), delirium tremens, etc., bring the patient's life to an earlier termination.

Any moderately severe disease in a drunkard, even a simple bronchitis, may become grave and take on from the beginning an adynamic character.

For the most part, the *prognosis* of chronic alcoholism is unfavorable, for it is only in rare instances that a patient so afflicted can be saved from the abyss into which he is slipping, and he is seldom able, in spite of the best resolutions, to abandon his vice of his own will.

The *treatment* must be directed principally to the cause. In private care it is impossible to stop the use of alcohol. This can only be done in hospitals, and best in asylums. In certain countries that are especially afflicted with the curse of drunkenness special asylums for the treatment of inebriates have been built. They are of great benefit to individuals as well as to society, lessen the number of accidents and crimes, even restore some almost hopeless cases, and have the important advantage that they prevent the transmission to descendants of infirmities due to alcohol. The establishment of such asylums in civilized countries cannot be too warmly urged. Forced confinement of such drunkards is justified on the clinical basis of the disease, and on consideration of the benefit such individuals deprived of free will, irresponsible, and decidedly the subjects of brain disease, derive from it. Since, however, at the present time such asylums are wanting, the worst cases of chronic alcoholism are sent to the asylums for the insane, where they do not strictly belong, save perhaps while they are in states of intercurrent agitation, and out of which, after the complications have disappeared, they pass, to relapse in a short time.

Only a prolonged residence in an asylum, where everything of an alcoholic nature is prohibited and the patient is systematically weaned from this nerve-stimulant, can afford help.

We mention only in passing the injurious or useless brandy treatment, with tincture of quinine, sulphuric acid, or tartar emetic, so often prescribed without success in private practice.

For the general practitioner it is important to understand the fact that weakening measures in drinkers easily bring on complications, especially delirium tremens, and that acute diseases take on an asthenic, pernicious character.

CASE 59.—Chronic alcoholism with remarkable degeneration of morals and character *(inhumanitas* and *ferocitas ebriosa)*. Brutality to the wife in a condition of drunkenness and excitement.

H., aged 50, land-owner; parents were given to drink. Of thirteen children in the family, only two are living. They are choleric, brutal men, given to drink.

The patient was a great drinker from his youth. In 1871, when he married a wife who had not the best reputation, he was morally and intellectually defective. Of late years he had indulged more and more in strong spirits, and his mental and physical strength rapidly diminished. The patient became more and more dulled in moral feeling, spoke the vilest language, called his wife vile names. He treated the servants shamefully and even maltreated them.

He neglected his business. Spent his time in saloons, was almost never sober, and even at night on awaking, drank *quetsen*, and in the morning he could not stand up for drunkenness. His states of intoxication became more and more pathologic. He cried, scolded, wept indiscriminately, spoke without sense, broke what was in his hands, threatened those around him with knife and revolver; so that everybody feared him.

For some years, on falling asleep and at night when he awoke, he had had sensory and sensorial disturbances. The bed danced with him; he saw dark forms passing in the air; saw birds, mice, rats, dogs, and cats flying about in the room. With this he had roaring, hissing, and humming in his ears, heard confused cries, and only with difficulty recognized that this was all deception. Sleep was bad. When he awoke he was usually bathed in perspiration.

On getting up he had such severe vertigo that he had to hold on to something; headache, vomiting of thick mucus, general tremor so that he could not put a spoon to his mouth. When he took more brandy he was better and the tremor disappeared.

December 29, 1874, the patient had drunk much brandy during the day and was angrily excited and drunk. In the afternoon he went home and asked his wife to give him sour milk. Because she did not have it at hand he became violently angry, shot twice into the wall with his revolver, and then shot his wife in the abdomen when she tried to calm him. When his wife fell he came to himself, was frightened, and wished to hang himself.

Afterward he remembered his act only in a dreamy way. He clearly did not wish to kill his wife; only frighten her. The examination in prison showed him to be a man much deteriorated ethically and intellectually. He had no anxiety about the future and no regret for his deed. His expression was morose and dull. The tongue was coated and trembling; skin faded and of a dirty yellow, the muscles relaxed; face red, capillaries dilated; the eyes circled; the left facial domain less innervated than the right; slight tremor in the hands and lower extremities. No disturbance of sensibility. Pulse rare, small, slow. Heart-sounds dull. Cardiac dullness somewhat increased. The liver extended beyond the line of the ribs. Appetite poor. Constipation. The patient complained of heaviness of the head, dizziness, headache, noises in the ears (especially in the morning), chronic bronchial catarrh. Sleep bad, disturbed often by fright and anxious dreams. Removal of alcohol during imprisonment, and later in the asylum, had a beneficial influence upon the seriously damaged brain, but the patient remained ethically and intellectually weakened and incapable of self-guidance. Attempts to give him more liberty were always followed by new excesses.

On the clinical basis of chronic alcoholism there is a series of intercurrent complicating affections of the brain which in part have great practical importance. These are: (1) delirium tremens; (2) drunken errors of the senses; (3) alcoholic psychoses; (4) alcoholic epilepsy.

1. Delirium Tremens.

One of the most important and frequent intercurrent affections in chronic alcoholism is delirium tremens. As the name indicates, its fundamental symptoms are deliria and tremor. Further symptoms that are never wanting are sleeplessness and errors of the senses. The malady occurs only in those given to habitual over-indulgence in alcohol, who present more or less clearly the symptoms of chronic alcoholism. A single over-indulgence in alcohol, no matter to what excess, never induces delirium tremens.

While the cerebral disease at the basis of chronic alcoholism constitutes the predisposition for the outbreak of delirium tremens, there are a number of exciting causes of the malady that must be mentioned. They have essentially this in common, that they have a debilitating effect upon the brain already weakened and reduced in resistive power. The most important exciting causes are: repeated alcoholic excesses *(à potu nimio);* cessation of indulgence in the accustomed stimulus *(à potu intermisso);* insufficient nourishment due to lack of food or aggravation of the chronic gastric catarrh; violent emotions; severe diseases, especially pneumonia; profuse suppuration; loss of blood; loss of sleep; painful diseases and injuries, especially fractures.

The outbreak of delirium tremens is never sudden. Very frequently gastric disturbances are present as prodromes, or there is sleeplessness with frightful hallucinations, or restless sleep with fearful dreams and frequent starting from sleep in fright; moroseness and irritability; oppression in the epigastrium, that may attain violent precordial anguish; noises in the ears; hyperesthesia of the auditory and optic nerves; headache, vertigo, nervous restlessness, and slight tremor of the hands and tongue. The duration of this stage of incubation may reach twelve days.

The actual paroxysm consists of a series of psychic, motor, and vegetative functional disturbances. With continued sleeplessness, psychic excitement, frequent frights, increasing emotional and sensorial excitement, formal disturbances of thought—which the patient describes as inability to keep his thoughts together, as confusion in his head, clouding of consciousness and delirium—come on. This is always only superficial and dreamy; and in a measure it is diagnostic of such conditions that, by urging, the patient can be momentarily induced to give correct answers, though he immediately relapses into his delirium.

The delirium is mainly concerned with hallucinations. The patients frequently think that they are in saloons, ask for drinks, or that they are about their occupation and busy with its usual details. The hallucinations, which at first are merely those of sight that occur only in the darkness, or during the day, have, for the most part, a frightful content, and are usually visions of animals,—not of a single animal, but of herds of them,—horses, dogs, rats, mice, and the like. They assume aggressive positions, crowd and force themselves around him, storm at him, snap and bite at him. With these there are ghost-like forms, hateful masks, but always in crowds.

Hyperesthetic and paralgic sensations awaken in the patient illusory perception of crabs, snakes, worms, spiders, etc., upon the skin; and on this in part depends the constant picking of the bedclothes and wiping of the skin usually observed at the height of the disease. Boils, injuries, etc., are frequently interpreted in the delirium as bites of animals, attempts at murder, etc. All visual hallucinations occur in greater number in the darkness; and even during convalescence they recur as soon as the patient, now out of his delirium, closes his eyes.

In the course of the delirium auditory hallucinations may also occur, consisting of confused sounds, noises, roaring, or frightful voices, not infrequently using obscene language; but in comparison with the predominating visual hallucinations these are episodic.

It is essentially the hallucinations that keep the patient in constant agitation, and even not infrequently cause him to develop an elementary insanity of persecution. Often, too, there are illusions: spots, cracks, and wall-paper designs are taken for animals, and the like. Persons that surround the patient are also, at the height of the disease, mistaken in the sense of the predominating deliria.

Owing to the frightful hostile content of the errors of the senses and apperceptions, acts of violence toward self and others may be committed.

Quite frequently there is delusion of poisoning, with temporary refusal of food in such delirious patients, due to the presence of oral or gastric catarrh.

The motor disturbances consist of tremor, especially marked in the fingers and tongue, frequent also in the muscles of the face and extremities; and these may even be intensified to general tremor. The gait of the patient is tottering, staggering, uncertain. Sensibility to pain is frequently absent. States of analgesia alternate with states of hyperesthesia.

Reflex excitability is frequently increased. There is purposeless rolling about in bed, jerking and throwing about of the extremities, which may attain the degree of partial or general clonic spasm. The pulse may go to 100 or more, and respiration is increased. Perspiration is usually profuse. The urine diminishes, becomes concentrated, of high specific gravity, and not infrequently contains a considerable amount of albumin. There is constipation. Gastric complications are always found. At the height of the disease sleep is absolutely wanting.

Delirium tremens is in itself a nonfebrile disease, though not infrequently here, as in the severe neuroses in general, sudden and very considerable elevation of temperature may occur, which, when complicating diseases of the vegetative organs are excluded, can only be referred to anomalies of innervation in the cerebral centers that regulate temperature.

Magnan has called such conditions febrile delirium tremens, and contrasted them with afebrile delirium tremens, as constituting a very severe form. These may occur primarily. Under such circumstances partial clonic and general epileptic spasms are frequent. The temperature rises rapidly as high as 43° C. Death is almost always the termination of this febrile delirium, which I, in common with Schüle, would regard clinically, not as delirium tremens, but acute delirium.

Very frequently the delirium takes on an adynamic character. The pulse becomes soft and small, the heart-sounds dull, and even the first sound may disappear. The patient collapses, sweats profusely; the delirium is low, seldom furious, with jerking of the tendons and carphology. The tongue becomes dry and foully coated, and consciousness is absent, even to the degree of sopor.

Delirium tremens lasts, on an average, from three to eight days, though relapses are frequent, and may cause the malady to be prolonged for several weeks. The general course is one of remissions and exacerbations.

Delirium tremens is a grave malady, since about 15 per cent. of the cases end in death. The danger lies in the possibility of exhaustion, the occurrence of cerebral complications (edema, acute delirium), and vegetative diseases, especially hypostatic pneumonias.

The terminations of delirium tremens are death by exhaustion or complications, of which cerebral edema with convulsions is especially to be feared; and a chronic condition (delirium of inanition), chronic insanity, or recovery. The latter may in mild cases occur quasi-critically after profound sleep. As a rule, recovery is gradual, with progressive disappearance of jactitation and delirium, and pauses of several hours of sleep. The patient passes through a stage of physical and mental prostration (clouding of consciousness possibly to the extent of stupor, weakness of apperception), in which the deliria are not completely corrected, and in which now and then hallucinations may recur. These in time are recognized as such, and are no longer a subject of anxiety. The psychoses that develop out of delirium tremens are hallucinatory insanity, protracted states of stupor, melancholias, and manias. They do not differ from other psychoses due to weakening influences, except for the traces of chronic alcoholism and the continuation of the hallucinations of the period of delirium tremens. In fatal cases of delirium tremens, besides the changes due to chronic alcoholism (cloudiness and lymph-stasis in the pia, etc.) there are venous hyperemia and edema of the pia and brain.

The treatment of delirium tremens must take into consideration, first, the causal indications, and then the symptomatic indications.

With relation to etiology, prophylaxis is of the greatest importance. Physicians practicing in public hospitals and prisons have abundant opportunity to employ it. If the patient be a drinker, then he should not be entirely deprived of his habitual nerve-stimulant; or at least the moment a grave disease is present it should be prescribed; otherwise one of the exciting causes of the delirium becomes

active. At the same time, care must be exercised that severe or painful disease or injury in a drinker be not treated by weakening means (bleeding, drastics, etc.); on the contrary, strengthening dietetic and medicinal treatment must be used.

Since, under such circumstances, every drinker is in danger of delirium tremens, any possible symptoms of incubation should be carefully looked for, especially sleeplessness, and the latter should immediately be treated with hypnotics (opium, with or without spirits; chloral hydrate, with or without morphine; paraldehyde, amyl hydrate, sulphonal). The indications for treatment of the developed disease are to avoid all weakening measures and to induce sleep as quickly as possible.

The first rule is justified by the decidedly asthenic character of the inanition delirium, as well as by the sad result of former weakening treatment. The second recommendation depends upon the fact that experience has taught that the delirium ceases as soon as the patient obtains a deep and sufficiently long restoring sleep.

In the choice of hypnotics there must be fulfillment of individual indications, and consideration of the general state of the patient. Any possible complications (fever, inflammatory diseases), especially the state of the heart (fatty degeneration, cardiac weakness), must be taken into consideration.

Three groups of cases may be distinguished:—

1. Cases in which the disease occurs for the first time in strong young persons, without fatty heart, without arteriosclerosis, especially without signs of advanced chronic alcoholism, without complications, and without fever. Here, with medicinal doses of wine, chloral hydrate, with or without opium, suffices. Smaller doses (chloral, 1 to 1.5 grams; morphine, 0.01 gram), but frequently repeated, every three or four hours, have, according to my experience, the preference over larger doses given less frequently. If the case is one suitable for chloral, then its hypnotic effect, as a rule, comes on after the second or third dose. Sometimes its effect is not obtained, and it may even increase the excitement. Under such circumstances its continued use and larger doses are of no use and seem even dangerous.

A drug almost as useful as chloral, though not so prompt in its effect, though less dangerous and less frequently without effect, and which at the same time can be more generally employed, is opium. In the hospital we prefer to use it subcutaneously rather than internally; for, used in this way the dosage is exact, and absorption by the stomach, owing to the usual severe gastric catarrh in chronic alcoholism, seems problematic and imperfect, as is proved by the enormous doses of opium which such patients bear and require when it is thus given.

Used subcutaneously, the irritative effect on the gastric catarrh of opium used internally is avoided, which is an important advantage to the patient, whose rapid convalescence and avoidance of relapses depends especially upon

the condition of digestion and assimilation. The initial dose should be 0.03 gram of the *extracti opii aquosæ*, and repeated every three or four hours until sleep is induced. If subcutaneous treatment is impossible (country practice), the remedy should be given by enema or in suppositories.

It is of great importance not to stop the opium immediately when its hypnotic effect is apparent; otherwise relapses easily occur. The danger of these is decidedly lessened if the opium treatment be continued several days, in smaller doses of 0.01 to 0.02 gram, after the critical sleep, especially if given in the evening after convalescence has begun.

2. A second group of cases is characterized by the presence of physical complications (pneumonia, grave injuries), or, where these are wanting, by fever, which under such circumstances must be regarded as a neurotic symptom, and which, as Magnan emphasized, renders the prognosis most decidedly unfavorable; or we have to deal with cases in which there are evidences of advanced alcoholic marasmus, with fatty degeneration of the organs, especially of the heart, and signs of cardiac weakness (dull heart-sounds, weak heart-beat, rapid pulse, want of arterial tone). Under such circumstances, chloral, being a decided heart poison, which may induce cardiac paralysis through the medulla, is decidedly contra-indicated. In such cases the use of opium is indicated, and not dangerous, if the possibility of cardiac weakness is combated by stimulants, preferably wine or spirits in generous doses, and, in case of necessity, by acetic ether or ammonia. In these cases the hypnotic treatment may be forced, if the activity of the heart is carefully watched and the stimulants increased with the increase of the opium. Paraldehyde up to 12 grams, and amyl hydrate up to 6 grams, as the dose for twenty-four hours, are also indicated.

3. A third group comprises cases in which, owing to neglect,—severe complications, high fever, advanced alcoholism, repeated relapses of the delirium,—the patient is in a marked adynamic state, with profound disturbance of consciousness, heavily coated tongue, collapsed features, muttering delirium, carphology, subsultus tendinum, cardiac weakness, and a weak pulse, beating 120 or more. In such cases scarcely anything is to be expected of narcotics, and their application is even dangerous. Here only a restorative and decidedly analeptic treatment can save the patient's life. The best hypnotic and calmative means is strong wine in generous doses. If the heart's action is insufficient, camphor or musk may be given. If sopor occurs, then cold douches are of use. If the danger to life is overcome, then treatment with opium or paraldehyde, as under Group 2, may be begun cautiously.

With the attainment of restorative sleep, care to improve as much as possible the nutrition of the patient is the principal thing in delirium tremens. The condition of the stomach makes this very difficult. At the height of the disease a milk diet is the most advantageous. The best is milk thinned with soda-water or a natural acidulated water. If by jactitation and constant rising from the bed the patient is in danger of exhaustion, then restraint (in severe cases) cannot be avoided. Since the patients are dangerous to themselves and others, isolation in a well-warmed room and careful sur-

veillance are necessary. Innumerable accidents make this absolutely imperative. As an example, I will mention an accident which occurred years ago in the Berlin Charité, where a delirious patient, during the momentary absence of the nurse, broke the skull of a neighboring patient.

Cases of delirium tremens do not belong in asylums. All large towns, especially in countries that produce wine, should have cells for delirious patients. When convalescence begins, the maintenance of sufficient sleep and the restoration of a good state of general nutrition, especially treatment of the gastric catarrh, are the most important objects of therapy. With the dietetic treatment, preparations of quinine, preferably a decoction of quinine with muriatic acid, are useful; also subcutaneous injections of strychnine, 0.001 gram, two or three times daily.

CASE 60.—Delirium tremens. Treatment with morphine and chloral.

S., aged 32, laborer, not tainted, previously always healthy, a drinker of wine and beer for years. Since August 17th, after extreme alcoholic excesses, he had felt tired, depressed, without appetite, slept badly, had frightful dreams, and woke up frequently. Excessive indulgence in brandy on August 26th. The following night he was still more frightened and saw his home burn and the flames licking about his bed. He was as if paralyzed with fright. Then the devil and curious enormous insects came and danced about him. He also felt them sting and bite him. The room was filled with a legion of thieves, robbers, and men made of rubber. He hid under the bed with fear. On the 27th he heard frightful voices. He wandered about in fear and was constantly without sleep. Admitted September 2d, he is without fever, congested, anxiously disturbed, trembles like an aspen-leaf, sees crowds of animals, and hears frightful voices. The patient is a tall, powerful man. With the exception of gastric catarrh and enlargement of the liver, there are no vegetative disturbances. Pulse, 70, slow. The patient receives 2 grams of chloral with 0.01 gram of morphine.

He sleeps the night of the 3d, and is free from visual hallucinations. He still has hallucinations of hearing. Known and unknown voices call him a wicked fellow, reproach him with having no shirt. He passes good nights under treatment with morphine and chloral.

On the 6th the voices disappear which toward the end he had heard only just before going to sleep. He is now lucid and has insight into his disease. He grows stronger, but for some days is weak and troubled with tinnitus (cloudiness and redness of the ear-drum). Discharged well on the 16th.

2. HALLUCINATIONS OF THE INEBRIATE (SENSUUM FALLACIA EBRIOSA).

The great tendency of drinkers to develop errors of the senses, especially of vision, is well known. Usually they are merely ele-

mentary and fragmentary. In rare cases they occur in great number and as a disconnected hallucinatory delirium which has a very transitory character, but which lasts no longer than a few hours. Repeated alcoholic excesses and caloric influences may induce them.

The elements of the delirium are visual and auditory hallucinations; their content is frightful. With this there are acusma (confused noises and roaring) and precordial distress. Consciousness is clouded and dreamy, not permitting recognition of the hallucinations; but this does not exclude a summary memory for the events of the attack.

Serious acts of violence toward others are possible as a result of the state of consciousness induced by hallucinations and illusions.

CASE 61.—Alcoholic hallucinations. Wife-murder.

S., aged 36. Like his wife, an excessive drinker of wine and brandy. For years he suffered with bad sleep, dull head, tremor, vomiting, headache, and dizziness in the morning on waking. He was always brutal, had become irritable and maltreated his wife, and had even threatened to kill her.

From the 1st to the 8th of December it was said that he and his wife consumed about twelve liters of brandy and were drunk almost all the time. From the 8th to the 16th he had delirium tremens (violent fear, saw processions of men, robbers, saints, angels, Christ, animals, and heard music).

From the 16th of December until the 4th of January he was free from hallucinations, but he felt weak, tremulous, incapable of work, had a cloud before his eyes, slept badly, dreamed of robbers that tried to get in a window, felt dizzy, dull in the head, had no appetite, and had noises in his ears.

January 4th he took his son to some relatives about two hours away and there drank about a liter of wine, and on his way home one-half or three-fourths of a liter. On leaving the saloon his head was on fire and he knew not who he was; saw himself surrounded by a crowd of horses, oxen, and girls; ran away in fear, and reached home after several hours, exhausted. He had some reason, still spoke to his wife, drank a little more wine, and went to sleep. After a time S. started up, awakened by a noise of men crying out; he saw robbers at the window pointing guns at him, and then a cloud came before his eyes.

In fright he sprang from the bed, took his loaded gun, more dead than alive with fear. Then his consciousness became still more clouded, and he only knew that he heard a weak detonation, saw then two reddish-yellow angels at the window, and when he approached them found his wife lying in her blood. With this he threw open the door of the maid's room and called for help, saying that his wife had shot herself. The servants had heard a dispute; then all was still. After awhile they heard three dull blows, then the wife saying: "Jesus, Victor, what are you doing; are you crazy?" Then came the shot. The wife was shot through the head, and lived only a few minutes.

S. thought that his wife had shot herself. He wept, ran about, and seemed abnormal to those around him. Care was taken to prevent him injuring himself. The officers that came at half-past one found him more sensible,

but a little anxious. At his hearing he declared that his wife had shot herself. His unembarrassed, indifferent manner was remarkable.

The patient is livid, the veins of the face dilated, the eyes circled, the lids edematous, the face puffy, gait unsteady, hands trembling, sleep restless; disturbed by dreams. Physical examination reveals slight enlargement of the spleen and liver, and gastric catarrh. Patient complains of dullness, headache, noises in the ear, vertigo. He often has precordial distress. At night he hears music of a hand-organ, talks to himself, and often starts.

In the daytime he was silent, sunken in thought, apathetic, and showed neither regret nor other emotion. Weakness of memory and mental weakness in general were unmistakable. At first, S. still declared that his wife had shot herself. He had only a very summary memory of the events of the night of the tragedy. Toward the end of February he felt better and recalled his hallucinatory experiences, began to doubt that his wife committed suicide, and to think that perhaps in his fear and drunken hallucination he had killed her. Gradually he became perfectly clear about the situation. There was nothing pathologic except slight weakness of intelligence; monocrotic, slow pulse; slight tremor of the hands, and restless sleep. His subjective symptoms were limited to noises in the ear and weakness of memory. He could not bear even small quantities of wine; for when he took it he immediately had a curious feeling in his head.

3. Alcoholic Psychoses.

Not infrequently distinct psychic disease-pictures occur in drinkers. Not all these diseases have specific features. Thus, melancholias and manias occur which differ from the same diseases due to other causes, only in that the organic foundation lends them a grave idiopathic character. The melancholias are mainly stuporous; the manias are violently congestive, with profound disturbance of consciousness, or they present a reasoning character.

With these, however, there are, upon the basis of chronic alcoholism, psychoses that are quite as specific as delirium tremens, which never develop after a single alcoholic excess, no matter how extreme, but which, independently of any such excess, develop as a result of any somatic or psychic accessory cause affecting the deteriorated brain of the habitual drinker.

These specific alcoholic psychoses are:—

(a) Alcoholic Melancholia.

This is distinguished by sudden outbreak and an acute course, lasting usually from eight to ten days, infrequently a few weeks. It is further distinguished by the considerable clouding of consciousness, the numerous hallucinations, the violent precordial distress, possibly becoming a panphobia, raptus melancholicus, attempts at suicide, and rapid subsidence, with only summary memory; so that to the convalescent patient the disease seems like a bad dream.

Owing to the disturbance of consciousness and the acute course, there is no systematization of delusions or connection of them with self-accusation; this could occur only in protracted cases. The numerous hallucinations occurring especially during states of fearful apprehensive emotion are, in part, accusing voices (murderer; thief; sexual accusations, as, for example, being infected; threats of death and imprisonment), and, in part, visions (white forms, the devil, ghosts, masks, animals, usually in great number). The latter are more episodic, and they are not further elaborated in the delirium.

Somatically there are usually signs of acute alcoholic intoxication, chronic alcoholism, headache, violent congestion, and sleeplessness. The most frequent causes are emotions, especially fright, and alcoholic excesses. The prognosis is very favorable.

The sleeplessness and fear yield to opium quite as readily as they do in delirium tremens. To combat the congestion, baths with ice-packs are indicated, and, with increased heart-action, digitalis.

CASE 62.—Alcoholic melancholia.

G., aged 49, married, baker. His father was a drinker and he himself has been given to drunkenness. Of late years he had become irritable, and during the last few months had slept badly, frequently trembling in the morning. In April and May he had much to do, with cares about the purchase of a house. May 7th, violent fright on account of a chimney burning out. Thereafter he became sleepless, fearful, wandered about profoundly depressed, and said that he was a capital criminal, had killed his child, had a heart of stone, was unworthy to have his wife near him, and belonged in prison. The patient presented marked congestion of the head, tremor of the hands, and at times on the 9th and 10th of May saw multitudes of rats and mice, did not sleep, was much excited, anxious, heard himself accused of having violated girls, drunk the blood of children, and that he was therefore destined to be infamously punished. He awaited the coming of the executioner, was in fearful fright, so that his admission to the clinic became necessary on May 16, 1880.

Consciousness is decidedly disturbed; he is anxious, delirious, has numerous visual and auditory hallucinations, sees robbers, the devil, hears accusing voices saying that he is a villain, dog, an onanist, has seduced girls, had commerce with animals, and must be burned. The patient says he is guilty, that he has lived immorally, has compared persons of high standing to beasts, and expects an ignominious death.

The patient is of medium height; very stout; pulse small, 120; temperature, 37° C. Heart-sounds dull, hands and tongue tremulous, head hot and congested. The patient falls asleep, but is immediately wakened by frightful dreams. At times panphobia, affects of despair. With opium and wine he slept. On the morning of the 18th congestion and fear were somewhat less. The patient says that he has seen much fire and many animals. He had been in Heaven, then had flown down like a bird of prey, and stopped on the point of a spire. He had descended too late to prevent a terrible misfortune. When at last he succeeded in loosening himself, Heaven had fallen

to the earth. He had set fire to the whole city and brought misfortune upon innumerable men; had led forth numerous children bound, and caused railroad accidents. He always heard voices telling him to ask God for forgiveness; but he could not pray, his head was filled with confusion. He must have a double; consists of two personalities. He hears his own voice, and the other does everything for him. In his imagination he runs about the whole house.

With opium treatment (up to 0.15 gram subcutaneously twice daily) the patient becomes quieter, sleeps sufficiently, and gains physically. Toward the end of May, however, he was still anxious, embarrassed, hallucinated, and disturbed. The people scold about him and look in the window threateningly. He feels as if his hands and feet had been cut off. His double had murdered the emperor and queen, and the guilt for these crimes is placed on him. He occasionally mistakes a fellow-patient for God, who reproaches him and calls him a liar. Another patient seems to him to be the Emperor of Russia, and he fears to be taken for a nihilist and punished. He complains that his head is full of frightful thoughts that he cannot banish. He often thinks that all is deception, disease, but he cannot help himself.

June 2d, after a few good nights, the hallucinations cease. The patient begins with a little help to gain complete insight into his disease. Now and then he is still troubled with frightful illusions. For some time the patient is still exhausted, sleeps much, and improves rapidly with the use of tonics and frictions.

On June 26th, when he was able to give an account of what he remembered of his disease, he said that suddenly on May 9th the disease began with violent fear and confusion. It was as if God himself were judging him, and he were damned. From that time on he had very few clear moments. Those around him at one time seemed frightful, at other times like God; and he had murdered wife and daughter. It was as if a veil had been lifted from his eyes when both appeared before him at a visit on June 4th. He had but vague memory of all other events of the disease. On June 30th he was discharged recovered.

(b) Mania Gravis Potatorum.

The specific maniacal disease-picture which develops upon the basis of chronic alcoholism corresponds, in large part, with that described by other authors as mania ambitiosa, congestiva, gravis (Schüle). I have observed it only on the basis of chronic alcoholism, and I find, in the grouping of the symptoms, detail, and course, peculiarities that make it seem to me to be specific. It is never preceded by a melancholic period. The outbreak is sudden with clear signs of congestion; or it is more like the initial maniacal excitement of dementia paralytica, differing from it only in that the psychic weakness in mania gravis (alcoholic) is not so evident.

The initial symptoms are increasing irritability, change of character, fluxions, disturbed sleep, sometimes absence of sleep, restlessness, and tendency to wander about and indulge excessively in alcohol. Very soon there is decided elevation of self-feeling. The disease

quickly reaches the height of furious mania, or attains this degree through a stage of maniacal excitement. This differs from benign maniacal exaltation, in the presence of marked increase of self-feeling, in the great irritability which may lead to terrible violence toward others, in the boastfulness and the tendency to buy and waste, and in vagabondage and brutal recklessness; also often in eroticism, which may be directed toward daughters or shown in the open street. Delusions of grandeur occur early.

At the height of the furious mania the profound idiopathic and organic nature of the process is indicated by the great confusion, disturbance of consciousness, irritability, enormous increase of self-feeling, and the motor acts being almost exclusively impulsive; also frequently by salivation, tremor of the lips and tongue, facial paresis, myosis or unequal pupils, and disturbance of speech due to ataxia of the lips.

With this, in all cases there are associated delusions of grandeur which equal in their outlandishness those of the paralytic, though they are not so desultory or so varied. A religious content predominates. The patients declare themselves to be God, Christ, an emperor, enormously rich, etc.

Sometimes there are also desultory delusions of persecution, especially of poisoning; or the delusion of marital infidelity. At the height of the disease there are numerous hallucinations, at first almost exclusively of sight (devil, angels, divine persons, paradise); later, of hearing with corresponding content.

The maniacal acts are distinguished by their frightful brutality and destructiveness; by howling, crying, raving, smearing, and tearing; and temporarily and episodically there are attacks of angry mania.

Somatically in most cases there is pronounced congestion with sleeplessness. At the height of the disease there are exacerbations and remissions. In the remissions the picture becomes one of maniacal exaltation with persistence of grand delusions, with a mania to collect objects and be busy, in which the clothing and bedding are sacrificed; in many cases, however, is present the picture of psychic enfeeblement.

The height of the disease lasts, on an average, some weeks. In favorable cases sleep returns and the excitement subsides. The remissions become more marked; the excitement passes through a stage of angry mania, which is followed by a condition of mental enfeeblement, with phenomena which are the last echoes of maniacal exaltation and have the characteristics of moria and reasoning, or by a condition of profound mental exhaustion, with demented brutality

and irascibility, before recovery is attained. However, it may happen that at the acme of the disease the condition grows worse, passing into acute delirium, rapidly followed by death.

In other cases the disease becomes chronic; the excitement gives place to increasing mental weakness; the affects take on a childish character, and from the height of grand delusions the patients often suddenly pass to childish weeping. Occasionally there are still angry explosions, or congestive maniacal attacks. The profound disturbance of the mental and motor centers is more and more clearly shown in the continued impulsive, purposeless destructiveness, and smearing. The delusions of grandeur become weaker and more fragmentary; affects disappear or are expressed in a silly manner. Even at this stage, recovery is possible; the psychic organ, so profoundly injured, does not come forth intact,—the patient is defective, mentally weakened, and remains very irritable to alcohol and emotional stimuli. For the most part, a profound degenerative process in the brain is the result: progressive dementia with destructive impulses. With this, there is rapid loss of weight, slow monocrotic pulse, weak heart-sounds, relaxed arteries, subnormal temperature, boils, phlegmons—due to the smearing and rolling about in straw—that cannot be made to heal. Then finally there may be facial palsy, inequality of pupils, unilateral sweating, and awkwardness and uncertainty in the movements of the limbs.

Death occurs after a few months or a year as a result of decubitus, colliquative diarrhea, or hypostatic pneumonia, with the patient in a state of mental and physical marasmus.

The prognosis is doubtful. In one-half the cases, but only in the first stage, recovery takes place—of course, often enough with mental defect.

Autopsy in advanced cases shows hyperostosis cranii with disappearance of the diploë; anemia of the pia, clouded as a result of lymph-stasis; edema of the brain; commencing atrophy (narrowing gyri). The orifices of the vessels gape and the vessels are dilated. The ventricles are somewhat dilated and the ependyma sometimes granular.

The disease-picture at the beginning and at the height of the disease indicates the presence of vasoparetic hyperemia, and in this stage a recovery is still possible. In later stages there is emigration of elements of the blood into the perivascular spaces, with lymph-stasis, and retrograde changes in the brain.

In the initial stages, prolonged baths with ice-packs, injections of opium and ergotine, are to be recommended, and, when the heart's action is increased, digitalis. During the transition to the secondary

stage supporting treatment with opium and quinine is indicated. In the final stages, rest in bed, warmth, stimulation of the circulation, good food, and care to prevent decubitus are necessary.

CASE 63.—Mania gravis potatorum. Death.

S., aged 36, day-laborer. He had an insane sister. He was given to drink from his youth. He was very sensual, and a rascal who stole in order to drink. Fifteen years before he was caught in an act of burglary. He received several severe blows, with a wound on the head. He was always very choleric and quick-tempered. Nine years ago he married and had five children, four of whom died soon after birth. For years, with other signs of chronic alcoholism, he has been extremely irritable and brutal.

The middle of August, 1878, the patient became sleepless, restless, sold his small property for nothing, stopped work, struck his wife, and threatened to burn the house when she talked to him about his conduct. He spoke unreasonably, and constantly boasted of his strength and wealth, and thought by a rich marriage and business to increase his fortune enormously. He followed women in the streets.

On admission he presented profound disturbance of consciousness, impulsive restlessness, ran about blindly, and began to destroy and strike about himself when he was not allowed to depart. He boasted of his sexual power, declared that he was enormously rich, and would now marry several beautiful women. Great mental weakness. His ideas were disconnected and without motive.

The patient presented the appearance of a drinker: face dusky, with dilated vessels; circled eyes, expression confused, facial innervation unequal, tremor of the lips and hands. Arteries rigid; pulse strong, jumping, 96, increasing to 130 with exercise. The apex-beat is external to the line of the nipple. The left ventricle is hypertrophied. In place of the second sound over the left ventricle and the aorta there is a blowing murmur.

The patient is sleepless, sings, whistles, and destroys impulsively everything that falls in his hands. He rolls in his straw and boasts of his enormous strength; he can turn over thirty railway cars with one hand or stop a railway train at full speed. This unheard-of strength comes from God. Great change of mood; usually gay, episodically angry. He changes suddenly from the height of joy with singing of Te Deums to childish weeping, and then speaks of hanging himself. The mania presents the features of mental weakness and confusion, indicated also by the childish emotional state.

The patient is constantly sleepless, and no result is obtained from digitalis, opium, morphine, chloral, beer, wine, or brandy. The patient wanders about dreamily, pounds on the doors, smears, and destroys everything in a truly impulsive way.

His grand delusions (descended from God, he knows not how; is himself God, captain, president, the first of all the world) become more and more disconnected and more and more affected by dementia until they finally disappear in a childish gay state of feeling, which stands in striking contrast with the mental deterioration. Physical decay also comes on in December. There is subnormal temperature (36° C.). The pulse becomes small, 60, weak, and attacks of unilateral sweating in the domain of the left cervical sympathetic

with dilatation of the vessels, and elevation of temperature over the corresponding half of the head, are observed.

The left pupil becomes wider, the left facial is less innervated, and there are diarrhea and slight symptoms of collapse, with decided loss of general nutrition and progressive anemia (rest in bed, wine, brandy). The patient grows more and more demented, but the dementia remains gay. He believes himself in Heaven and as healthy as an angel. When not in bed he wanders about, smears, destroys everything that comes to his hand, has the mania of collecting everything, eats rags, goes to the spittoons, etc. Progressive deterioration, decubitus; death, July 4, 1879.

Autopsy: Hyperostosis of the bones of the skull, sutures complete, external hydrocephalus. Diffuse milky cloudiness and thickening of the pia over the frontal and parietal regions. Pia edematous and anemic. The vessels at the base atheromatous. The surface of the brain is swollen and the convolutions are flattened; the cortex, olive-green. The brain is anemic, edematous, and the vessels markedly dilated. The ventricles are dilated and filled with clear serum. The ependyma is viscous, thickened, but without granulations. Lungs edematous. In the upper lobe of the right lung, flaccid hepatization. The left ventricle is much hypertrophied (three centimeters thick), heart-muscle pale, slightly fatty. Aortic valves shrunken and thickened. Aorta dilated, with stiffened walls due to atheroma. Spleen, liver, and kidneys show venous hyperemia.

(c) Hallucinatory Insanity.

This is a rather frequent disturbance, having specific features, which Marcel recognized, and which is well described by Nasse as the "persecutory insanity of the insane drinker."

In the first place, the short stage of incubation emphasized by Nasse is noteworthy. It is marked by headache, vertigo, disturbed sleep, signs of congestion, and the usually sudden outbreak of the actual psychosis, with frightful hallucinations, especially of hearing. In the disease-picture itself, the hallucinations of sight, which are rarely wanting, are to be emphasized. They are incorporated in the delirium, and manifest a certain degree of persistence. For the most part, they have a frightful content and lead to violent reactive fear. With this there may be fantastic forms and visions of animals of indifferent content. Hallucinations of taste and smell are infrequent. These likewise have an unpleasant content, and lead to delusions of poisoning. The hallucinations of hearing are the most important. With remarkable frequency these have an obscene content: the patients hear insulting remarks about the condition of their genitals (no penis, impotence), or sexual insults and threats (pederasty, bestiality, masturbation, etc.).

The deliria are those of persecution and grandeur. The former are the most important and are primary. These, too, have very fre-

quently a sexual content and are concerned with marital infidelity or the immoral conduct of others, with which still further delusions of persecution (threats of murder, kidnaping, etc.), with corresponding hallucinations (criminal approaching execution, etc.), may be associated. The paralgic and hyperesthetic states so frequent in chronic alcoholism may also lead to delusions of physical persecution (electricity, etc.).

As a result of persecutory delusions and hallucinations there are very frequently violent reactive attacks of fear. As Nasse found, in other respects these patients are remarkably devoid of emotional feeling.

Delusions of grandeur may episodically appear even in the beginning, but, as a rule, they occur in the course of the disease with corresponding hallucinations. They are about great riches, royal positions, etc. (one of my patients received a message from God telling him that he would be made burgomaster). Less frequently than Nasse I have observed religious delusions (Christ). The accompanying somatic disturbances belong to chronic alcoholism. The course is a rapid one to recovery or to terminal states of mental weakness. The prognosis of the acute case is good; doubtful, when the course is chronic. As a rule, only recovery with defect can be obtained (mental weakness with incomplete insight into the disease after disappearance of delusions and hallucinations); but perfect recovery is not impossible.

CASE 64.—Alcoholic persecutory hallucinatory insanity.

W., aged 33, married, official, comes of healthy parents. He developed well, was talented and free from disease. During the last ten years he had indulged in alcoholic excesses (wine, beer), and had eaten irregularly. For some years he has been intolerant of alcohol and heat. Since the beginning of 1881 be had suffered with stomach trouble, morning vomiting, and trembling on rising in the morning. In the summer of 1881 he fell by stumbling over the trunk of a tree, and became immediately confused. One hour later he fell unconscious, and thereafter was maniacal for three days. Amnesia for this period. After coming to himself, he recovered entirely.

Since the spring of 1882 he had had much overwork, many cares, annoyance in his occupation, and had been driven to drink more than usual. Of late his stomach trouble and tremor had decidedly increased. In July he felt excited, sometimes dull, and had scotomas. Since the beginning of August he had slept badly, complained of noises in his ears, noises at night, barking of dogs, feeling of oppression in the chest, congestion of the head, and difficulty in working. Those about him often noticed that he stared before him, was suspicious, fearful, and unusually irritable.

September 3d the patient took a trip to Budapest on business. To fellow-travelers he seemed peculiarly retiring, irritated, and excited. As he said after recovery, he thought on this journey that innocent conversation in the

car was directed at him. He thought he heard himself called deserter (the patient had not fulfilled his military duties because he was absent from the country) and onanist. On arrival in Budapest he felt very uncomfortable, uncertain, and embarrassed. In the evening, while eating in the garden of the hotel, he heard an order read for his arrest, and some one asked for him. He was pursued as a deserter. It seemed remarkable to him that at the same time he remained calm. He hastened to his room and tried to go to sleep. He could not sleep. From all sides he heard his past and his present spoken of and criticised, as if through telephones. He also heard that he had been marked with the nickname of "black dog."

On the 4th he felt that his head was much benumbed. He was much embarrassed and could scarcely trust himself on the street, awaiting from hour to hour his arrest; the more because he had heard that the order for his arrest was in the newspaper.

On the night of the 5th there was a frightful experience: he saw revolting, threatening forms, dark shadows, fly through the room, and voices that criticised his actions and called him "pig, vagabond, onanist; there's a fellow who is falling again." He was very much excited and beside himself about these low accusations. When he went out on the street on the 5th he noticed that he was an object of general attention. From all sides he heard himself called "pig, villain, black dog." He fled to Ofen, but decided at the railroad station to return to Gratz. While sitting in the train he heard officers ask the conductor whether the "black dog" was there or not. At the stations there were large crowds of people who wanted to see the "black dog." He crouched in his seat, especially because stones were thrown at the window, and when the train stopped he heard the words: "Hurry or the crowd will tear him to pieces." In neighboring compartments he heard conversation about his immoral life. On arrival in Gratz he hurried to put himself under the protection of the police, who sent him to the clinic.

In a state of fear the patient arrives. He is without fever, presents symptoms of gastric catarrh, slight icterus, enlargement of the liver, tremor of the tongue and hands, reduced sensibility in the feet reaching to the ankles. His nights are sleepless, and hallucinations and delusions continue. He hears noises and cries as coming from a crowd; voices which had already pursued him in Budapest. They spoke in a Schwabian dialect (his native place is Schwabia); announced to him that he must undergo public disgrace for his sexual crimes. The patient protests verbally and in writing against these infamous accusations, is anxious, excited, and asks not to be escorted by officers, and demands official protection against his persecutors. In the night he is constantly the subject of consideration (voices of pursuers, officers); he frequently jumps up in fright and complains of precordial distress.

Treatment with opium is begun on September 10th. His nights become quieter; the voices subside. On September 19th he began to correct his delusions, saying that he must have had a kind of persecutory delusion in his head. The patient is still exhausted, slightly neurasthenic, but recovers under tonic treatment and opiates, that favor sleep, by the end of September.

His statement concerning his memory of the attack confirms the details given in the history, and also the predominant sexual tinge of the hallucinations, as well as the absence of visual hallucinations. There were no amnesic periods.

(d) Alcoholic Paranoia.

Alcoholic paranoia is infrequent. Its delusions are essentially those of persecution, but there is occasionally transformation to delusions of grandeur. That which characterizes alcoholic paranoia is the sexual nucleus of the delusions. The patients hear all sorts of sexual accusations and think they are called sodomists, pederasts, violaters, etc., and are hated by everybody. With this there are the somatic and psychic symptoms of alcoholism, the specific hallucinations, and especially the visual hallucinations foreign to other forms of persecutory paranoia. Besides, the features of mental weakness early appearing in the disease-picture are noteworthy. The roughness and irritability manifested in brutal reaction toward the supposed persecutors, which render these patients extremely dangerous, also deserve attention.

CASE 65.—Alcoholic paranoia.

C., aged 53, single, tailor, was arrested for arson, and after police examination was sent as insane and dangerous to the psychiatric clinic in Gratz. He said that all his trouble was due to the accusation of his enemies, the burgomaster and the woman of whom he had rented his apartments. It was all a plan of his persecutors, who wished to destroy him and render him forever incapable of action. He had called down the hatred of the woman a year ago, because he had denounced her to the police as having secretly given birth to a child which she had murdered and hidden in the garden. Though he had seen the criminal in the act and it was spoken of publicly, the police had not paid any attention to his accusation. Soon thereafter the burgomaster told him he must marry a prostitute pregnant by the burgomaster's brother, a command which he refused with indignation. Since this time he had been the object of persecution by the woman of whom he rented, as well as of the head of the Commune. They followed him step by step, chased away his customers, and accused him of sexual immorality. At night he heard them speaking about him. Among other things, they said he was a hypocrite, that he secretly committed debauches, was impotent, etc.

Before this woman became his enemy he had noticed that she had cast an eye on him. She had repeatedly said that she wished to come to him, for she could no longer live with her husband because he had intimate and criminal relations with his own daughter. The patient thinks that the woman has become his enemy because he has refused her propositions, and that she has since turned to the burgomaster. He heard them say that from jealousy they hung about near him to spy upon him and watch him. When he denounced the woman to the police he noticed that the body of the child had been dug up and hidden in an unknown place. In this way he explained the lack of success of his accusation. He was scarcely shut up before he heard in prison, day and night, the voices of his two enemies. Evidently they had allowed themselves to be imprisoned with him in order to spy on him and shame him. The content of their conversation was essentially obscene. They talked

about his gallant adventures and about his suspected impotence, "because nothing came out of it."

The patient's father was a drinker of strong spirits. Several brothers and sisters died at an early age, probably of convulsions. The patient was of low mental development and early gave himself to drink. He has evidently had chronic alcoholism for years. Bad sleep for months, unpleasant dreams, frequent awakening in fright, occasional visions of animals at night.

The patient is intellectually much weakened and is pleased to find in the hospital protection from his persecutors, since he does not hear them. Confused expression, weakness of the right lower facial, tremor, restless nights, awakening in fright after dreams of frightful animals and persecution. He sticks fast to his delusions. The patient was sent to an asylum in his district.

(e) Alcoholic Paralysis.

Sometimes chronic alcoholism terminates in a condition similar to paralytic dementia. In contrast with the ordinary cases of this disease, which etiologically have nothing at all to do with alcoholic excesses, or in which alcoholic excesses are only a subsidiary cause, in harmony with Schüle, from a differential diagnostic standpoint, we may emphasize: the acute course of usually only a few months; the extreme and usually general tremor of the patients; the frequency of apoplectiform and epileptiform attacks; the frequency of anesthesias or hyperesthesias limited to the lower extremities; the intense headache in the beginning and during the course of the disease; the relative infrequency of grand delusions; the remains of earlier delusions of marital infidelity; the frequent and clearly alcoholic hallucinations of sight; and the slighter disturbance of speech, for the most part limited to ataxia of the lips and less characterized by syllabic stumbling.

With this there is the more favorable course, in that such cases of alcoholic paralysis (pseudo-paralysis) may recover entirely, or at the worst with defect.

In cases that came to autopsy I found the usual pathologic changes of paralysis; but it is remarkable that the granulations otherwise always found in the ependyma were wanting.

CASE 66.—Alcoholic paralysis. Recovery.

S., aged 31, miller, admitted January 18, 1876. Father was a drinker and mother had convulsions. The patient was healthy, except for small-pox, which he had when he was a child. He early gave himself to drink, and for years he had been irritable, suffered with headache, vertigo, and slept badly. For some months he had been forgetful, negligent in his work, and done all sorts of crazy things. For some days he had been excited, sleepless, wandered about, and expressed grand delusions. On admission there was great disturbance of consciousness. He did not know where he was and thought he was in

a mill. His thought is disconnected and confused, and he says that he is the owner of a mill and will marry the widow of a miller; that he has a fortune of 100,000 florins and will rebuild the mill in a most beautiful way.

On the head there are a few superficial scars in the skin; no trace of lues; the right side of the face is less innervated than the left; fibrillary twitching of the facial muscles; tremor of the lips and tongue; speech considerably disturbed by labial ataxia, though without stumbling on syllables; gait unsteady, slightly vacillating.

Pulse very slow, 68; left pupil reacts more slowly than the right. The vegetative organs normal. No alterations of sensibility. Patient wanders about, talks of silly projects of grandeur, intends to buy the hospital to reconstruct it, is expecting the miller's widow, who is in love with him because he is such a fine, powerful man. He is easily diverted from his thought. The motor disturbances change, increasing on the whole. On the 24th and 28th an epileptiform attack (general convulsions, with loss of consciousness); increasing dementia with intercurrent states of excitement. Sleep improves under the use of baths and chloral. Injections of morphine are given for the states of excitement. April 20th, another epileptiform attack. In the course of May consciousness grew clearer, the motor disturbances passed away, except for the dilatation of the left pupil and twitching of the muscles of the left cheek that was manifest in movements of expression and speech. The patient gains insight into his disease, and he himself ascribes it to over-indulgence in spirits. His mental weakness also passes away, and the patient becomes entirely capable of his employment again, and since, up to January 13, 1877, no return of symptoms were observed, he was discharged. The recovery has been maintained.

4. Alcoholic Epilepsy.

The brain changes due to alcoholic excesses may also lead to epilepsy. Factors which favor the origin of epilepsy in drinkers are not infrequently found in hereditary predisposition, convulsions in childhood, and injuries. The statement by Magnan that alcoholic epilepsy occurs only in drinkers of absinthe is not correct. It may be caused by all kinds of intoxicating drinks.

Since epilepsy depends functionally upon a lasting abnormal innervation of certain cerebral centers (so-called epileptic change), it is clear that, like delirium tremens, it cannot be induced by a single alcoholic excess, no matter how extreme, but only by long-continued excesses. The occurrence of an epileptic attack under the exciting influence of drunkenness always proves that this epileptic change—*i.e.*, epilepsy—pre-existed, just as the return of epileptic attacks in epileptics are frequently enough induced by the influence of occasional indulgence in alcohol.

If alcoholic epilepsy become once established, then the most important exciting causes of the attacks are alcoholic excesses. About 10 per cent. of alcoholics present epileptic attacks. They are, in general, late manifestations of chronic alcoholism.

Frequently these epileptic attacks are only incomplete, in that they effect only single groups of muscles or one side of the body. It is further noteworthy that they are usually inaugurated and accompanied by violent congestion. Too, consciousness frequently is not entirely lost. But, besides these incomplete attacks, there are others which differ in no respects from the vertiginous or convulsive picture of epilepsy. For the diagnosis, the manner of the beginning of these attacks is of greater importance than their form, in that the attacks occur at long intervals, but are repeated, when they occur, in connection with an alcoholic excess. Quite ordinarily such a series of attacks is followed by psychic disturbances in the form of epileptic delirium, or a dreamy or stuporous state of clouded consciousness. Sometimes a simultaneous complication with delirium tremens or hallucinations is observed. With the occurrence of alcoholic epilepsy the intellectual degeneration of the patient makes rapid progress.

The prognosis is very unfavorable, partly on account of the disease itself, and partly because of the repeated alcoholic excesses, which intensify the predisposition and provoke new attacks. Bromide of potassium seems useful in alcoholic epilepsy; but numerous drinkers, without the administration of potassium bromide, remain free from attacks during their stay in the hospital, with its favorable hygienic surroundings, and especially owing to their cessation of indulgence in spirits.

CASE 67.—Alcoholic epilepsy. Combined delirium tremens and epileptic delirium.

P., aged 37, merchant, not predisposed, much given to excessive drinking since youth. He had delirium tremens in 1859, and in 1860 severe typhoid with cerebral symptoms. Nine years ago, after alcoholic excesses, he had his first epileptic attack. Such attacks recurred about every four months, usually after excess in drinking, and were single. They began with violent headache and were followed by stuporous states lasting several hours, in which the patient was anxious, saw threatening forms, animals, and flames. None had occurred in five years until October 22, 1876, after renewed alcoholic excess. In the morning while drawing on his boots the patient suddenly felt a violent headache; it grew dark before his eyes, and he fell unconscious. The attack was repeated in the afternoon. In the evening the patient was brought in a stuporous state to the hospital, his tongue bleeding where it had been bitten. He gives general statements about himself correctly, seems anxious, unsettled, and excited. General tremor; no fever; pulse, 88, soft, slow. Heart-sounds dull, liver enlarged. Patient sleeps a little. On the 23d the patient comes to himself, astonished to find himself in the hospital. His memory extends no further than the morning of the 22d.

In the course of the afternoon the patient began to see birds, mice, rats, rubber men, all trying to lift him in the air. Increasing restlessness, violent

tremor. In spite of chloral, sleepless until the 24th, with innumerable visions of animals. On the 24th, at 7 o'clock in the evening, epileptic attack, with biting of the tongue. Thereafter complicating the delirium tremens there was an epileptic delirium, profound disturbance of consciousness, terrible fear, blind raving, and attempts to get out. The patient sees murderers, is butchered, his head lies on the bench and he feels great gaping wounds in his body. At intervals again innumerable visions of animals. He thinks he is in a saloon, drinks beer, holds his empty glass to the waiter, and scolds because the waiter does not come immediately. Chloral without effect. On the 25th 0.15 gram of extract of opium subcutaneously. The patient sleeps the entire night of the 26th, quickly becomes lucid, and has summary memory. He says that for the first time he had such frightful delirious attacks nine years ago, and five years ago, which occurred after epileptic attacks and lasted about five days. The patient recovers rapidly under small doses of opium, and is discharged October 30th.

CHAPTER II.

Morphinism.

MORPHINE, used to-day in so many cases to relieve pain, especially in the form of subcutaneous injections, in many instances gives not only relief from pain, but also induces a feeling of intellectual and physical well-being which augments the power for intellectual and physical work while its effect lasts. Thanks to these properties, morphine is not only a sedative (narcotic, hypnotic), but it is also a stimulant and a means of inducing pleasurable feeling. This latter effect of morphine seems to be especially marked in individuals of neuropathic constitution (Erlenmeyer). The continued use of morphine is by no means harmless. Like the continued and excessive use of alcohol, it induces symptoms of chronic intoxication, and has such a powerful influence upon nutrition and the functions that, in those accustomed to its use, dangerous conditions arise when the usual dose is diminished or suddenly stopped (symptoms of abstinence). Owing to the sufferings which occur immediately with abstinence, the need and desire for morphine as a stimulant, and also owing to the profound weakness of the will which occurs as one of the results of abuse of morphine, the attempt to free such patients of their evil demon is difficult, and it can be accomplished, as a rule, only in a hospital.

Almost every morphinist reaches a condition when the sufferings due to chronic intoxication outweigh the pleasant effects, and the latter can be obtained only temporarily or as a result of very large doses of the drug. Under such circumstances medical interference becomes imperative; for the health and life of the patient are

threatened by grave dangers. The etiologic conditions favoring the origin of morphinism are principally a peculiar constitution which experiences a pleasurable effect from the administration of morphine. The immediate causes of its use are found in all diseases accompanied by pain or sleeplessness when they last long enough. If the physician lightly leave this drug at the disposition of his patient, or if the patient is in a position to obtain morphine easily, then he falls a victim to morphinism.

Symptomatology of Morphinism.

In describing the symptoms, those of chronic intoxication and those resulting from abstinence are to be distinguished.

Symptoms of Intoxication.—These rarely occur before three months in persons of good resistive power (healthy, not burdened), often much later, and even then they are so mild that the real abnormal change in the nerve-centers manifests itself only with abstinence. There seems to be in these cases conditions like those found in alcoholism, the severe and degenerative effects of which require a more or less abnormally predisposed personality. In any event, it is not the daily dose nor the duration of the indulgence that is decisive, but the individuality. The symptoms of chronic intoxication are psychic and somatic. We are here interested principally with the psychic symptoms.

Morphine never injures so profoundly the psychic organ as does alcohol, but I have never seen a morphinist that was psychically intact. Intelligence, it is true, is practically spared, but the highest mental functions — character, ethic feeling, self-control, mental energy, and force—always suffer. The fully developed morphinist is an individual weak in character and will and without energy, who should receive, under criminal prosecution, the benefit of attenuating circumstances, and who in the care of his interests and duties should always be given help.

In severe cases we find, in addition, weakness of memory, especially defect in the power of exact reproduction, difficulty of intellectual activity that may reach the degree of torpor, occasionally psychic depression reaching even marked dysthymia and *tædium vitæ*, great emotionality, and, in general, profound deficiency of resistive power to affects; and besides, there may be episodically nervous restlessness, excitement, even attacks of fear due to vasomotor causes, and occasionally visual hallucinations.

A great part of the somatic symptoms may be referred to the influence of morphine to lessen secretions and act as a vasomotor constrictor. Owing

to lessened salivary secretion there is troublesome dryness in the mouth and throat; lessened secretion of the sebaceous glands causes dryness and hardness of the skin; and stagnation of the secretions in the glands favors the formation of boils. Owing to the defective secretion of the stomach and pancreas, digestion and assimilation suffer, and also defecation, as a result of diminished peristalsis. The secretion of urine is also usually lessened; albuminuria is not infrequent. Amenorrhea also often occurs early, but ovulation is rarely interrupted, as numerous cases of pregnancy, in spite of amenorrhea, prove. Aspermia is also observed.

On the other hand, it is remarkable to note that the secretion of perspiration is often much increased. Numerous motor disturbances are added: reduced muscle-tone, tremor, disturbance of co-ordination reaching the degree of marked ataxia, weakness of the sphincters, myosis, weakness of accommodation, cystospasm, disturbance of innervation of the heart (asthenia cordis, attacks resembling angina pectoris). In part, we may refer to vasomotor spasm the reduced turgor vitalis, the pale, sunken cheeks, the coolness of the skin, and the need of warmth observed in these patients. The sensory sphere also manifests its implication in hyperesthesias, neuralgias, and paresthesias. Frequently lihido sexualis is reduced very early, and in time is lost. In the advanced stages of intoxication anorexia and obstinate sleeplessness come on. Fever is not infrequent in the form of slight febrile temperatures in the evening (sometimes even presenting a picture of the typhoid state; but the temperature rarely rises above 38.3° C.), or in the form of intermittent febrile attacks which cannot be distinguished clinically from a genuine intermittent fever of the quotidian or tertian type. The result of all these troubles is increasing marasmus, *senium præcox*, which sometimes as a result of fatty degeneration of the myocardium and cardiac paralysis leads to a sudden end.

Symptoms of Abstinence.—These vary in accordance with the sudden or gradual suspension of the morphine. The differences are really quantitative. Symptoms of gradual removal may occur even with a decided reduction of the dose. The first symptoms of relative abstinence or of hunger for morphine are yawning, itching of the skin, nervous restlessness, anxiety, vomiting, and diarrhea. With this there are: extreme weakness, tremor, neuralgias in the extremities and the viscera, chills, great need of warmth; profuse perspiration, very unstable vasomotor activity, vacillating pulse; general increased reflex excitability, sensorial hyperesthesia, floating spots before the eyes, and noises in the ears which may become hallucinations; agrypnia, disturbance of consciousness with defective correction of errors of the senses and sudden resulting perverse acts; painful restlessness, anxious confusion, dysthymia that may become *tædium vitæ;* a peculiar disturbance of memory (incorrect localization in time of past events). There may even be states resembling delirium tremens, as in total abstinence; and it is interesting (Rehm) that even in a long course of removal subcutaneously, a formal hallucinatory delirium may occur; as in one of my cases, in which it came on late, after presumably the state of abstinence had been passed. This delirium is mainly frightful, with numerous hallucinations; also with hallucination of taste and smell, and hostile interpretation of the numerous abnormal cutaneous sensations (delusion of physical persecution, persecution with electricity).

Symptoms due to sudden total abstinence occur after about six hours. The patients become relaxed, weak, incapable of standing, have symptoms like

those of cholera nostras, profuse sweating, general tremor, painful anxiety, restlessness going on to weeping, raving, and violent demand for morphine, which immediately removes all the troubles due to abstinence, and the patient may not hesitate to commit a crime to get the drug.

Not infrequently, following these symptoms of abstinence, there is an hallucinatory delirium lasting several days—a true delirium of inanition, which, on account of its numerous analogies with alcoholic delirium tremens, may well be called the delirium tremens of morphinism (numerous visions of animals; episodically also obscene deliria, mainly of frightful content, agrypnia, tremor). In severe cases the symptoms of abstinence and inanition may reach a point of dangerous cardiac and respiratory weakness, collapse, and coma, and make it absolutely a vital indication to administer morphine.

Symptoms of intoxication and abstinence in the form of elementary psychic disturbances, anorexia, and asthenia, may exist a long time, even months, after the drug has been withdrawn.

Treatment of Morphinism.

The methodic withdrawal of the poison under medical supervision in a hospital is the first indication. Withdrawal is only contra-indicated in cases in which an incurable and extremely painful malady demands the use of the drug. Under such circumstances morphine is the lesser evil.

The method that the author has used many years is that of gradual withdrawal. Sudden withdrawal is cruel, not without danger, and increases the danger of relapses. We first determine the minimum amount, *i.e.*, the daily dose, with which the patient can get on. This first diminution may be very considerable (the half or the third of the usual daily dose); for morphinists consume much more than they require. From this reduced dose we proceed carefully during the course of ten or twenty days, until the dose is reduced to nothing, while replacing the morphine, in accordance with the individuality, by morphine internally, or still better by injections of hydrochlorate of codeine, or of the aqueous extract of opium; or finally by the extract of opium internally. Rest in bed; good, rich food; especially milk with cognac, etc., for there is usually aversion to meat; eating during the times when the patient feels well immediately after an injection; rich wine in liberal doses; and baths of 63° F., aid the patient to endure the sufferings of the withdrawal.

The state of the heart must always be watched. To overcome agrypnia bromides, 3 grams, with laudanum (Erlenmeyer) are useful, as are also sometimes amyl hydrate and trional. Chloral hydrate should be avoided. The withdrawal of the last drops of morphine often costs very dear. Much of this is psychic. It is often possible to

bring calm with injections of distilled water unknown to the patient. When later the patient is told of this trick it increases his confidence.

With the withdrawal of the morphine the cure is by no means ended. The causes which in the first place render the patient a morphinist must be removed, the last traces of intoxication and abstinence must disappear, and the person must be made morally and physically capable of resistance. For this purpose, weeks and even months of after-treatment may be required. If the fulfillment of these indications is impossible, then relapses are inevitable.

CASE 68.—Morphinism.

C. P., aged 29, physician's wife, tainted family. Her husband gave her four years ago repeated injections of morphine for severe toothache. She experienced with this a feeling of great well-being. Thereafter she had all sorts of trouble and cares and also very frequently toothache, and being the wife of a physician who had remedies in the house, she could easily obtain morphine; thus she became a morphinist. She took large quantities, and, when gradually symptoms of chronic intoxication came on, she also began to take cocaine, which had first been given to her in an attempt to withdraw the morphine. The patient cannot state the size of her doses. During the last few months she had always taken a thimbleful of morphine and the same amount of cocaine dissolved in water, and had injected this as she required it. There have been symptoms of intoxication for a year (agrypnia, anorexia, amenorrhea, anemia, tremor, loss of flesh). She could not get on without morphine, and the moment the usual dose was not injected at the proper time she had symptoms of abstinence in the form of dreadful discomfort, feeling of great weakness, anxiety, depression. During the last few weeks she had had occasional attacks of anxiety and frightful auditory and visual phantasms (effect of cocaine?), with even attacks of hallucinatory delirium.

April 20, 1887, the patient came to the nervous clinic at Gratz to undergo a cure by withdrawal. She brought a considerable quantity of morphine and cocaine with her. The cocaine was stopped immediately and without injury, and she was given 0.2 gram of morphine daily.

Tall, powerfully built, but thin and anemic; skin faded, dry, pale; color muddy; muscle-tone diminished, relaxed attitude; nervous, depressed expression and action. Pupils narrow; tremor of the hands; patellar reflexes much reduced. Heart-sounds pure, strong; no vegetative disturbances; urine without albumin; temperature normal.

Ordered: rest in bed, wine, and rich food. The minimum dose with which she could get on was found to be 0.22 gram of morphine. This dose of morphine was gradually reduced (on April 27th it had reached 0.12 gram; on May 2d, 0.03 gram daily). From May 2d on aqueous extract of opium internally, with reduction of the morphine to 0.01 gram. From May 7th on, injections of water. The symptoms of abstinence were limited to fatigue, depression, and mental indisposition. Agrypnia was overcome with 4 grams of bromide with 20 drops of laudanum.

A few days after the withdrawal of the morphine, rapid improvement of general nutrition to the extent of several pounds, improvement of the turgor

vitalis and appetite, restoration of sleep with a general state of comfort, and disappearance of the fatigue. On May 21st there was nothing abnormal mentally or physically to be observed. The patient looks well and as though she had grown younger. Absolutely no more need of morphine. Though Mrs. P. was discharged May 23d, she has remained well and has had no relapses.

CASE 69.—Morphinism.

Mrs. K., aged 40, wife of an official, of neuropathic family, said to have been healthy previously. She fell ill with violent emotional excitement after her first puerperium, with hysteria gravis. She was given injections of morphine. This overcame the convulsions and the hysteric pain, but the patient could not give up the drug without having immediately severe hysteric attacks. At first she bore the drug well, but after a few years the menses stopped. Still she had children (ten years ago and six years ago). The last child was weakly and died, soon after birth, with convulsions. Libido sexualis was early lost. Since some years there has been, with a daily dose of morphine of 0.25 to 0.5 gram subcutaneously, loss of flesh. The patient felt weak, exhausted, and incapable of her household duties. She had chilly feelings, vague neuralgic troubles, palpitation, tremor, and in 1884 for a long time attacks of intermittent fever, which were referred to malaria. Sleep continued good.

On account of the troubles mentioned, the patient decided, on April 28, 1883, to submit to a cure by withdrawal in the nervous clinic. She is of middle height, reduced in flesh and muscle-tone. The deep reflexes can scarcely be elicited. The pupils are narrow; pulse weak; heart-tones muffled; tremor of the hands and tongue; dry, cool skin; anemia; anorexia; urine free of albumin. Temperature, 36.9° C. The minimum dose she could bear was 0.35 gram of morphine daily.

Ordered: rest in bed, forced feeding (milk). An attempt to reduce the morphine at first causes globus, clonic spasm of the diaphragm, anxious restlessness. With the help of aqueous extract of opium internally, it was possible by May 11th to reduce the morphine to 0.1 gram. From May 18th the patient was given only distilled water and extract of opium internally up to 0.15 gram. With the elimination of the morphine there was a decided improvement in nutrition. The menses, which had ceased for ten years, returned on May 22d, and were normal. There are slight hysteric attacks. Under the use of valerianate of zinc and extract of opium they disappear, and convalescence continues undisturbed.

June 6, 1882, the patient returned to her family. She used still for some time these remedies, and had only now and then slight hysteric attacks. There was no desire for morphine. After a sojourn in the country she presented herself in October, 1885, in blooming health and spirits. Menses normal.

November 27, 1886, another confinement. In the puerperium (eight days) violent fright, severe hysteric attacks. The physicians gave injections of morphine (0.02 gram) daily. On January 26, 1887, the patient herself came requesting a new cure. The withdrawal was successfully accomplished within a few days with the internal administration of opium. Since this she has remained well.

PART FIFTH.

Brain Diseases with Predominating Psychic Symptoms.

CHAPTER I.

Acute Delirium (Transudative Hyperemia in Transition to Acute Periencephalitis).

By this term, derived from a specially prominent symptom and the course of the disease, psychiatry designates a grave and usually fatal cerebral disease, in which, along with great disturbance of motility and the general system, those of the psychic sphere occupy the foreground. At the autopsy there are always changes recognizable with the unaided eye, even though they are not strictly uniform.

They consist of congestion of the brain and its membranes. The hyperemia extends usually also to the spinal cord. The hyperemia is frequently reduced and covered during the latter days or hours of life by the occurrence of edematous exudations. The general appearance at the autopsy is that of venous stasis in the cerebrum. The brain expands, and the cortex seems swollen. White streaks often follow the course of the large vessels in the pia mater, due to the lymph-stasis in the sheaths of the vessels.

The microscopic examination reveals the evidence of blood-stasis, with enormous extravasation of elements of the blood as a result. The lymph-sheaths appear distended with white blood-corpuscles, among which red corpuscles are not infrequently found. Here and there capillary extravasations may be found. The lymph-stasis extends through the sheaths of the vessels: on the one hand, into the lymph-spaces of the pia; on the other hand, into the system of Deiters's cell network, and even into the periganglionic space.

Cloudy swelling of the ganglion-cells is frequently found. Aside from the cerebrum, we frequently find hypostatic congestion of the lungs; the heart relaxed; the cardiac muscle soft, pale, fatty, or granular; the blood of a remarkable dark color and very liquid. Fürstner has called attention to the occurrence of granular waxy degeneration of the voluntary muscles, like that observed in typhoid fever, typhus, and other severe acute diseases.

The causes of the disease are numerous, but they have this in common: they are direct injurious influences affecting the brain.

Probably in all cases the initial change is in the vasomotor system, and the initial hyperemia of the disease-process arises out of vascular paralysis. The disease affects almost with equal frequency males and females, and, as a rule, in middle life.[1] The actual exciting causes are emotional excitement, alcoholic excesses, extreme mental strain, caloric influences; but much more important are the immediate, but predisposing, causes of mental and physical overstrain in the struggle for existence, years of trouble, drunkenness, insufficient food, the weakening effect of severe confinements and diseases, and the changes incident to the climacteric. In many other cases there have been cerebral shock due to head-injury or sunstroke; typhoid with cerebral complications; or indefinite cerebral or psychic diseases in earlier years that have left behind evident results. At least the frequent hyperostosis of the skull, the chronic clouding and thickening of the pia, and the circumscribed atrophies of the cortex, so frequently found in patients that have died in acute delirium, indicate such a basis.

In by far the majority of cases of my observation there has been, besides, hereditary predisposition to nervous disease in persons especially irritable in their emotions and in their vasomotor functions.

Too, as a result of the weakening effect of typhoid, of delirium tremens, or of furious mania in a decrepit brain, this acute delirium may develop. It may also occur as a complication of dementia paralytica, or of hysteria, when one of the exciting causes mentioned is active.

When these etiologic facts are considered, the assumption suggests itself that the pernicious character of the cerebral hyperemia that constitutes the disease is founded in the pre-morbid character of the brain, and that acute delirium is a peculiar form of reaction to a hyperemic process in a burdened or exhausted brain, the vascular tone of which is profoundly reduced. While the pathogenesis points to influences reducing vascular tone and indicates that the hyperemia is originally arterial and due to lessened resistence, the further course indicates early change of the condition to that of venous hyperemia induced by the slowing of the circulation in the passively dilated vessels, in connection with early occurrence of weakness of the heart's action. The direct result of venous hyperemia is exudation of elements of the blood into the lymph-paths of the pia and the brain, a result that may be favored by congenital delicacy of the vessels, or

[1] Of 45 primary cases in my observation, 22 were men, ranging in age from 30 to 47; and 23 were women, ranging in age from 27 to 46 years.

disturbance of nutrition of their walls[1] due to inanition, alcoholic excesses, etc. Later on, pressure symptoms appear with those due to irritation. At times there seems to be partial absorption of the exudate (remissions), but the constantly recurring fluxions (exacerbations) cause renewed exudations, until finally absorption and removal of waste-products from the brain are no longer possible.

The fact that when this point is reached recovery but seldom occurs is, in part, explained by the pre-existing clouding and thickening of the pia (occlusion of the lymph-vessels), perhaps also by the primitive condition of these vessels (Arndt); and, in part, by the existence of hyperostosis of the skull (narrowing of the vascular passages), in connection with which the finding of Hertz is suggestive (abnormal narrowness of the jugular foramen); but the early insufficiency of the heart's action is of great importance, due to pre-existing fatty degeneration in cases that develop as a result of inanition, alcoholism, or of disturbances of nutrition (cloudy swelling) occurring in the course of the malady, so often accompanied by an extreme elevation of temperature.

The final termination of the whole process is complete venous stasis in the brain, with which there may still be enormous transudation (edema). In these patients death occurs, with increasing symptoms of cerebral pressure, in sopor or as a result of paralysis of the heart.

Clinical Aspect of the Disease.—The initial symptoms of acute delirium are those of violent hyperemia with symptoms of irritation of the psychic and motor centers, to which are soon added symptoms of cerebral pressure. These latter, when the exciting cause has been intense and the brain is very vulnerable, may follow upon the cause immediately and stormily, or they may develop gradually during a few days or weeks.

The patients complain of headache, of a feeling as if the head were splitting, of heat, congestion, dullness as if intoxicated, and of difficulty of thought. They often have a premonition[2] of severe brain disease. They become irritable, excited, often anxious, morose, and complain of great apprehension. The mental inhibition, which may at times become stupor, is often felt to be painful. Objec-

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[1] Compare Jehn, who in four cases examined by him found fatty degeneration, thickening, proliferation of the nuclei of the adventitious tissue, deposits of globules of fat, and pigment.

[2] Two of my patients in the very beginning diagnosticated inflammation of the brain which was to prove fatal.

tively there are signs of congestion; disturbed, confused, expression; narrowing of the pupils; uncertain, slightly staggering gait; bad sleep with frequent starting in fright, or sleeplessness; sensitiveness to light, and noises. Sometimes there is vomiting. The transition to the height of the disease is sudden, stormy, and takes place with signs of severe congestion. Consciousness is reduced to a dreamy state, and the patient becomes delirious and raving.

At first the disease-picture may present the characteristics of a mixed or angry furious mania (especially when the exciting cause is an angry affect). If the mania is characterized by profound disturbance of consciousness and interruption of the psychic activities with predominance of instinctive movements of a stormy, impulsive character, then the disease-picture shows more the features of incoherent delirium and forced organic movement—as expression of the intense psychic and psychomotor cerebral irritation, with violent fluxion and profound disturbance of consciousness.

The course of thought is extremely rapid, confused; at most there is nothing more than association through assonance and alliteration. The delirium becomes extremely disconnected, and at the height of the excitement expresses itself only in disconnected words, syllables, and cries. The chain of thought is constantly interrupted, and with the continuance of psychomotor excitement there is at times verbigeration.

The deliria are mainly anxious and frightful. The patients talk mainly of the destruction of the world, universal destruction, death, poison. They see everything around them tumbling, burning, and that they are being buried in the ruins. They have never been in this world, never existed (annihilation of consciousness of personality). With this there may be also spontaneous episodic ideas of grandeur. Visions of blood and fire are especially frequent. As a motor reactive manifestation there are despairing efforts to escape from the threatening destruction. Such motor acts, though of psychic origin, owing to the profound disturbance of consciousness and the accompanying loss of muscle-sense and motor ideas, have a peculiar purposeless, uncertain, and impulsive character. Symptoms of irritation in the psychomotor centers are soon added: the patient throws himself about without end or purpose, stamps with his feet, bores in the pillow with his head, snorts and blows with the mouth, blows through his nose, breathes spasmodically and with ever-increasing rapidity.

To these psychomotor manifestations which have still an apparently voluntary character, in the further course symptoms of irritation in the subcortical centers are added. There is grinding of the

teeth, making faces, strabismus, tonic spasm of the muscles of the jaw, spasm of the nose, jerking movements of the extremities, reaching the degree of general tonic and clonic spasms. Speech is also disturbed, stuttering, indistinct (due to ataxia, insufficiency of the muscles, dryness of the mouth), and nasal (due to paresis of the soft palate).

In many cases reflex excitability undergoes general increase. The contortions of the body are then in part due to this; just as in rabies or in strychnine intoxication mere touching of the body may lead to general convulsive discharge. Under such circumstances swallowing is much interfered with, the food is regurgitated and spit out. Where reflex excitability is not intensified, the taking of food is not interfered with unless there be temporarily setting of the jaws, or the patient shuts his teeth as a result of delusions of poisoning.

The sensibility of the skin and the sense-organs in this stage is intensified, as a rule. Sleep is wanting or limited to short slumber, with frequent awaking in fright. In the very first days of the fully developed disease-picture there are symptoms of profound general physical involvement. In the majority of cases, in the very beginning the temperature is elevated, or at least there is fever during the exacerbations of the malady. The temperature may vary between 38° and 39° C., but not infrequently it attains from 40° to 41° C. or more. The temperature curve is very irregular.

General nutrition sinks rapidly, even when there is no fever and sufficient food is taken. Within a very few days subcutaneous adipose tissue and turgor vitalis disappear. The lips and tongue soon become dry, and the mucous membrane of the mouth is covered with a brown coating; the pulse becomes small, soft, frequent (usually over 100), and the general condition adynamic, with signs of heart-weakness and tendency to hypostasis in the lungs.

The patient's face, until this period congested, now becomes pale and even at times cyanotic. If the patient live long enough, there are usually petechia, suggillations, and decubitus. Salivation is not infrequent. Constipation is a regular symptom in the early period. Albumin is often found in the urine.[1] Constantly during the course.

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[1] The cases present various combinations of symptoms in accordance with the constitutional peculiarities or the causes. Thus, cases of stormier course with violent symptoms of irritation of the psychic or motor spheres (furibund deliria, violent jactitation, grinding of the teeth, striking, treading, etc.), with high fever, etc., are observed, in contrast with other cases in which there is early an adynamic state with evidence of cerebral pressure (stupor, sopor)

of the disease there are profound remissions lasting hours or days in which the delirium disappears and is even corrected. Consciousness clears up, the temperature is lowered, may even become normal, the motor signs of irritation disappear, and the remarkably lucid or only slightly stuporus patient presents the picture of simple exhaustion, complaining at most only of headache, and is seemingly on the way to convalescence.

It is but rare that this expectation is fulfilled, with remissions becoming more and more perfect and lasting; as a rule, there is but deceptive improvement, to be followed by even more violent exacerbations.

With this variation between congestive exacerbations and remissions having the character of exhaustion the disease pursues its further course, but the strength of the patient is more and more reduced and the malady takes on an adynamic character.

Out of the disease-picture of active congestive cerebral inanition there develops with increasing clearness that of transudative passive hyperemia of the central organ.

The stupor becomes sopor; the motor signs of irritation become ataxia, muscular insufficiency, and paresis (carphology, uncertain picking and brushing with the hands, tremor in the face and hands, difficulty in swallowing, etc.); the stormy deliria become muttering; the pupils, for the most part narrowed until this time, become dilated and slow in reaction; the conjunctiva and skin become anesthetic; the cheeks become pale with cyanotic tinge; the heart-sounds become dull; the pulse grows increasingly softer and more frequent (150 or more); the patient collapses; the skin is covered with clammy sweat; decubitus and pulmonary hypostasis develop; the temperature falls to the degree of collapse to rise again sometimes in the agony as high as 40° C. or more. Death results from arrest of the heart in profound sopor, usually following upon an exacerbation with congestive symptoms. The duration of the disease is seldom less than ten or more than twenty-one days up to the fatal termination. In cases in which life is saved, several weeks or months are required for convalescence, and the brain does not pass through this severe malady

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predominating over symptoms of irritation, in which the deliria are almost wanting or have a more dreamy, muttering character, when the motor disturbances are mainly those of ataxia, muscular insufficiency, and weakness, with absence of fever or but slight elevation of temperature, and with a slow course. Upon this rests Schüle's division of the disease into a meningitic or maniacal, and an inanition or melancholic form; but this author expressly recognizes mixed forms.

without undergoing a permanent alteration, manifested in a slight degree of mental weakness and great emotional excitability. Termination in dementia has been observed by some physicians.

Jehn describes the clinical manifestations of the reactive conditions of acute deliria as follows: The patient begins to whine, the flight of ideas diminishes, the motor unrest becomes peculiarly slow and feeble, and he lies for weeks at a time exhausted and without will. He must be waited upon and fed like a child. With this there are trophic disturbances (falling of the hair, exfoliation of the skin, arrest of growth of the nails, scanty improvement in nutrition); motor disturbances in the form of cataleptic retention of positions, tetanus-like stiffness of the neck; vasomotor disturbances in the form of pemphigus-like eruption, especially on the back of the hands and feet, phlegmons, decubitus, excoriations, cyanosis, edema of the extremities, with cardiac weakness; mental oblivion and inexcitability to the degree of stupor; weak, slow reflexes, and analgesia. Gradually there is termination in dementia, with disappearance of the muscular tension as expression of the transition to severe nutritive disturbance of the cortex (atrophy). In mild cases I have seen merely states of profound functional exhaustion lasting weeks or months which ended in recovery (*comp.* Case 70).

It is very important to recognize this pernicious brain disease early. It is easily confounded by inexperienced physicians with mania or diagnosticated indefinitely as "brain typhoid." As distinguishing it from mania, we have the beginning in severe, though possibly indefinite, symptoms of central disease; the profound disturbance of consciousness which exists from the beginning; the great confusion not dependent upon flight of ideas; and the early occurrence of symptoms of motor irritation which have no psychic features and do not belong merely to the cortical areas, but are symptoms of direct irritation and more particularly the expression of implication of the subcortical centers.

In the further course, the profound implication of the organism, fever, and the remarkable alternation of remissions that may reach the degree of lucidity, with periods of profound disturbance of consciousness and signs of psychomotor irritation, make the diagnosis certain.

It might easily be confounded with spontaneous meningitis of the convexity. The differential diagnosis depends upon the more frequent occurrence of meningitis in males, its peracute beginning, the frequency of an initial chill, the early occurrence of sopor, stiffness of the neck, the general hyperesthesia, the violent convulsions, and the less marked remissions in its course.

The prognosis of acute delirium is rather unfavorable. Of 45 cases, 26 died—15 males out of 22, and 11 females out of 23. This

would indicate that the prognosis in women is more favorable. It was especially unfavorable in cases where the acute delirium had developed upon the foundation of chronic alcoholism. The more acute and dreamy the development; the more profound the disturbance of consciousness; the more frequent, early, and widespread the signs of motor irritation; the more marked the implication of the whole organism and the more obstinate the sleeplessness,—the more serious is the case. Absence of profound and prolonged remissions is of bad omen, as is lasting avoidance of food. The fever is no criterion, though temperatures that reach 40° C. or more, and collapse temperatures, are decidedly bad symptoms; and a pulse that continues over 100 is ominous.

In the stage of congestion and irritation treatment must be directed to overcoming the hyperemia by means of ice, lukewarm baths, careful application of leeches behind the ears, and elimination by the skin and alimentary tract. Opium, so useful in acute meningitis, is here without effect. Small injections of morphine (0.01 to 0.015 gram) several times daily ameliorate the psychic irritation as well as the jactitation and the course of the disease, especially in cases that are accompanied by great disturbance of reflex excitability.

The results obtained by Solivetti by means of injections of ergotine are worthy of consideration.

Solivetti used Bonjean's ergotine. He diluted 1 gram with 6 grams of distilled water and injected this solution in three doses daily. While previously all his patients died, with this treatment he states that he never lost another. Usually after 4 grams on the fourth day the danger was passed. On the second day with diminution of congestion the deliria disappeared, and there was more calm and subsidence of the fever. On the fourth day convalescence with, of course, profound and continued exhaustion. Since Solivetti's communication I have treated many severe cases of primary acute delirium with similar favorable results. Ergotine (Wernich) was injected subcutaneously without dilution and without bad results, and always at the moment when new fluxionary symptoms manifested themselves.

Absolute rest, a darkened room, the most strengthening, but unirritating, food (eggs, milk, bouillon), are also indicated. If the patient enters the stage of venous stasis and exhaustion, then wine and quinine must be administered; and, when the heart's action is insufficient and there are symptoms of collapse, champagne, ether, and, in case of necessity, camphor and musk should be tried.

CASE 70.—Acute delirium.

Mrs. M., aged 37; her father was a drunkard. Father's brother was insane. Patient is said to have been previously healthy; was married in 1863,

and up to 1874 had borne, without special accident, four children. In her fourth lying-in period in 1874 she had an attack of melancholia without delusions. On July 10, 1875, in the third month of her fifth pregnancy, she entered the hospital on account of the intensification of the melancholia and was discharged recovered September 5, 1875. The patient was delivered without accident in Advent, and nursed the child eighteen months. On July 1, 1877, the child was weaned. On July 3d she became sad, anxious, disturbed, sleepless, and had visions of the devil. On the 5th twelve leeches were applied. Immediately there was stupor and then violent delirium. When admitted on the 6th profuse menses (secale), inanition-delirium (profound exhaustion, general reduction of nutrition, numerous visual hallucinations).

Rapid recovery toward the middle of July. Well thereafter. The death of her husband on February 28, 1878, was taken with much resignation. March 2, 1878, the patient became sleepless, complained of dizziness, headache, was restless, at one time gay and dancing, at another in a painful state. On the 3d decided remission. On the 4th she again manifested alternations of feeling and had frightful auditory and visual hallucinations. On March 5th there was violent headache, with profound disturbance of consciousness.

When admitted March 6th she was in menstruation, with profound disturbance of consciousness, dreamy recognition of familiar places and persons. Phases of stupor and stiffness alternate with others in which she sings and dances and throws everything about in impulsive motor unrest. Then episodically there is apprehensive excitement in which she calls to her dead husband, sees him, reproaches him with having left her alone; she sees the house burning, and takes those around her for enemies.

The patient is without fever, pupils dilated. Distinct anemia, reduced general condition. Up to the 9th the desultory delirium, the confusion, and the disturbance of consciousness excite suspicion of a serious disease, but neither fluxion nor fever, nor symptoms of motor irritation permit a diagnosis of acute delirium.

On March 9th, with the cessation of the menses, the scene changes. The patient presents violent fluxion, turns about in forced movements on her long axis, sees herself surrounded with flames in purgatory, tears her clothing off, and tries to put out the fire. For hours at a time, marked remissions with recognition of those around her. During these periods of calm there is remarkable pathetic speech, theatric posing, becoming at times ecstatic. Continuously sleepless. After a profound remission on the morning of the 10th a state of violent excitement with fluxions in which she pounds her head on the floor, cries, verbigerates, makes faces, and presents strabismus and nystagmus. Temperature, 37° C.; pulse, 100 (ice-bag). After half an hour, with subsidence of the congestion, the patient lies exhausted and quiet, with disturbed, frightened expression. Now and then making faces. No hindrance to taking food. The excitement is repeated in the afternoon.

March 11th, sleepless, quiet, exhausted, consciousness profoundly disturbed, making faces. Temperature, 38.4° C. Tongue dry.

On March 12th, a quiet night after an injection of morphine (0.01 gram); temperature, 39° C. In the course of the day profound remissions with subsidence of temperature to 38° C., which with morphine and leeches (on the 13th and 15th, four) lasts until March 16th. Congestive states of excitement less frequent and milder, with profound remissions interposed, and with subsidence

of temperature from 39° C. to 38° C. Violent exacerbation on the 16th after a quiet night. Forced striking with the hands, snapping and blowing with the mouth, making of faces, strabismus. She rolls her body about; temperature, 39° C.; pulse, 84, quick, strong. Tongue dry and cracked. Confused deliria of hell and fire.

On the 17th, failing, adynamic state. Subsultus tendinum, awkward movements of the hands, evidently much disturbance of motor ideas, making of faces, accentuation of syllables, verbigeration. This state continues until the 20th, with occasional remissions, which now are nothing more than stuporous states of exhaustion (wine and quinine).

On the 20th the temperature rises to 40.5° C., the pulse to 128. Clammy sweat, cool extremities, general ataxia, uncertain movements of touch and prehension. Sometimes still making of faces, rolling about, rising up.

Profound remission in the afternoon; she wishes to see the children once more and then die. "O how happy I shall be in heaven with my husband." She wishes to confess because she will die to-day. At noon vomiting of food containing three intestinal worms. Vomiting again in the evening. Death suddenly at 9 o'clock.

Autopsy: Skull-cap of ordinary thickness, very compact, somewhat more prominent in the right parietal region. Inner cerebral membranes present serous infiltration; the large veins dilated with dark, fluid blood; the small veins moderately injected, but along medial border slightly clouded. Brain swollen. Cortical substance streaked with injected vessels, with fine points, slightly reddened in places. Brain soft; white substance quite rich in blood and filled with dilated, injected vessels. Hypostatic congestion of the lungs. Heart but slightly contracted, containing dark, fluid blood. Heart-muscle pale, relaxed. Spleen enlarged one-half, pulp pale brown, soft. Spinal cord in general, but especially in the gray substance, rich in blood.

CASE 71.—Acute delirium. Treatment with ergotine. Recovery.

Helene B., aged 37, single, servant, was admitted February 25, 1882, to the psychiatric clinic in Gratz. Her father was a drunkard. She had rickets, was of low mental endowment and developed slowly, learning to walk and speak late. Menses began at 17 with pain. Thereafter they were regular. No severe diseases. She had a tendency to congestion and was intolerant of alcohol. In the middle of January, 1882, the patient took a new place. For a long time she had felt sick and nervously weak. Her new place was very hard and she had many unpleasant things to meet. She felt her strength failing more and more.

Since February 18th the patient had grown more and more forgetful, more confused, and more awkward in her work. She complained of headache and left her wine untouched because it mounted to her head. On the 24th she was scolded by her mistress on account of her inaptitude. At this she became entirely confused, beside herself, and commenced in the afternoon to be delirious. She was found at the fireplace crying and striking the wall with her fists. She talked about imprisonment and said the mistress was innocent.

After passing a delirious and sleepless night on the 25th, the patient began to shout and cry, was profoundly disturbed in consciousness, and confused. She was afraid of those around her, and also at times expressed fear of herself, she was so foolish.

Patient is without fever, not congested, the skull hydrocephalic. No vegetative findings.

On the 27th and 28th the patient remains in a state of profound disturbance of consciousness and delirious confusion. An irritated, angry, apprehensive state of feeling predominates; episodically there is eroticism and a pathetic, exalted manner. She is quite occupied with illusional and hallucinatory phantasms; sleepless. The night of March 1st was passed more quietly with 2 grams of chloral.

During the course of March 1st the pulse rose to 110 and the temperature to 38.5° C. Great confusion, apprehensive cries, occasional complaints of frightful noises, and that the devil left her no peace.

March 2d, sleepless night, angry, anxious excitement, profound disturbance of consciousness, tongue becoming dry. Jactitation, verbigeration, boring the head in the pillow. Temperature, 39° to 39.5° C.; pulse, 96 to 110. (Darkened room, two leeches behind the ears, 0.01 gram of morphine subcutaneously twice daily, ice-bags.)

March 3d, sleepless night, great jactitation, forced boring with the head in the pillow, throwing the arms about, hammering rhythmically with her legs, violent congestion of the head, sufficient food. Temperature, 38.6° to 39° C.; pulse, 110 to 135. Two leeches in the evening.

March 4th she slept a few hours until midnight. Then there was jactitation, boring in the pillow, crying, shouting, and "she would not let herself be cut into bits." Temperature, 39° C.; pulse, 120. Decubitus. With continuance of the injections of morphine twice daily, to-day 1 gram of Wernich's ergotine subcutaneously.

March 5th, sleep, diminution of congestion and of the cerebral irritation. Temperature, 38.5° C.; pulse, 96; tongue becomes moist. Still profound disturbance of consciousness. Toward evening some increase of excitement and congestion. Another injection of ergotine.

March 6th, slept well. Temperature, 38° C.; pulse, 96. Traces of clearing of consciousness.

From March 7th on, temperature, 37.2° to 38° C.; pulse, 84 to 96. All irritative and congestive signs have disappeared. The patient becomes lucid, tries to comprehend her situation. The patient, however, is physically and mentally greatly exhausted, and shows great need of rest and sleep. Her whole body feels sore, tired, weak. She cannot bear the slightest noise, complains of alternating feelings of heat and cold, is very emotional, whining, and now and then feels her mental incapability to be painful. When she closes her eyes she has phantasms, and a crowd of confused and unpleasant ideas come up. With rest in bed, quinine, wine, rich food, lukewarm baths, the patient recovers mentally and physically. Toward the end of March she can pass a few hours sitting up. This condition is followed by cerebral and spinal asthenia, with pressure in the head and spinal irritation lasting several months, which passes off satisfactorily during the summer.

When she was discharged on April 28th the patient confirmed this history, especially with regard to the strain and unpleasantness she had suffered in service. From February 20th she had no rest and no more real sleep, and felt an increasing confusion and dullness in her head. After the scene on February 24th she was anxious, frightened, and no longer knew what she was about. Of everything that had taken place up to about the middle of March

the patient had only a very summary memory—she lay in water, Gratz was in flames, she was in a railway train, saw war, Death, the devil, her neck was burning, she heard singing, and feared she would be killed.

CHAPTER II.

Dementia Paralytica (Periencephalomeningitis Diffusa).[1]

THIS disease may be defined clinically as a brain disease, usually chronic, with vasomotor, psychic, and motor functional disturbances, of progressive course, lasting, on an average, from two to three years, and ending almost always fatally.

The psychic disturbances consist of progressive deterioration of the general intellectual power to the most extreme degree of apathetic dementia. Upon this foundation there are changeable states of melancholia, mania, *furor*, delusions of grandeur and the opposite, of persecution, hypochondriacal delusions, stupor, etc. In general, the motor disturbances consist of changing, but progressive, disturbance of co-ordination of movement, reaching finally complete loss of co-ordination.

There are numerous intercurrent weaknesses of muscles reaching the degree of paralysis, and apoplectiform and epileptiform attacks.

The vasomotor disturbances consist of progressive paresis of the vasomotor nerves, reaching complete paralysis. Temporarily, as a result of this vascular paralysis, there are attacks of dizziness, congestion, fury, etc.

From an anatomic standpoint the disease is regarded as chronic meningitis (Meyer), cerebral atrophy (Erlenmeyer), general cortical cerebritis (Parchappe), periencephalomeningitis diffusa chronica (Calmeil). The last term is the most comprehensive and suits best cases of classic paralysis. Among the laity the incorrect term of "brain softening" is current. Clinically it is called dementia with paralysis (incorrectly, for the motor disturbances are not complications, but integral symptoms of the disease), general progressive motor ataxia of the insane, general progressive paralysis of the insane, paralytic insanity, and dementia paralytica.

GENERAL PICTURE AND COURSE OF THE DISEASE.

Before attempting to consider the symptoms in detail, it seems necessary to give a general view of the course and grouping of the symptoms of the disease.

[1] Common English synonyms: paralytic dementia; paretic dementia; paresis; general paralysis; general paralysis of the insane.—TRANSLATOR.

The vasomotor symptoms are the earliest to appear. Then come the psychic and the motor. The psychic symptoms may occur simultaneously with the motor or precede them, or in rare cases follow them.

The changes in the cortex of the brain which induce these symptoms develop, in the vast majority of cases, very gradually, and cause, after they have attained a certain degree of intensity and extent, decided loss and irritation in the psychic and motor spheres. This developmental period of the disease up to its acme (mania, delusions of grandeur, etc.), and until there has been destruction of the faculties necessary for social and mental existence, may occupy years.

The symptoms of this prodromal stage are at first equivocal, and often for a long time permit nothing more than a general diagnosis of a diffuse cerebral affection. The significance of these may at first be doubtful, in that the symptoms may be covered by those of severe cerebral neurasthenia (mental exhaustion, difficulty of intellection, rapid mental fatigue, quick paralysis of attention, difficulty of memory, irritable weakness of the emotions, agrypnia, pressure in the head, congestions, vertigo, etc.).

The similarity of these symptomatic pictures may still further be increased, on the one hand, by the occurrence of decided remissions, which may appear at first, and during which the virtual mental capability, especially that of memory, is retained, and, on the other hand, by the fact that the neurasthenic seldom fails to present hypochondriac depression with painful self-observation and exaggeration of his sufferings, even to the degree of fearing brain softening, with *tædium vitæ*, thus simulating the picture of hypochondriac paralysis.

In other cases the first symptoms consist of congestion, headache, vertigo, or attacks of ophthalmic migraine. Gradually the situation is cleared by distinct, lasting, and progressive deterioration of the general psychic personality.

"The patient becomes another and knows it not" (Schüle). The most certain and important manifestation in this respect is clouding of consciousness, a state of mental dullness, that at first is often interrupted by temporary clearing, but which episodically may extend to complete loss of self-consciousness, and thus occasion interruption of the continuity of mental existence.

In this progressive mental clouding the patient is no longer conscious of the numerous disturbances and defects that happen to intelligence, memory, and character.

This clouding of consciousness manifests itself clinically in two principal directions (time and place): in lack of orientation in time and place—the patient arrives too early or too late, turns night into day, gets lost in well-known streets, etc.

For similar reasons he commits a variety of errors in society: he appears in imperfect toilet in the drawing-room, goes in his night-clothes into the street, smokes in the theater, keeps his hat on in church, etc.

With this dulling of the energy of consciousness there are early associated signs of weakness of attention, judgment, and memory, with consequent numerous lapses. Weakened power of attention causes defect and incorrectness of apperception, and weakness of memory-pictures causes mistaking of persons and situations; weakened critical power, reflexion, and memory lead to errors of memory—mistaking of that which has been dreamed, read, or thought for actual experiences, to incorrect localization in past time. The power of the diseased brain to retain new impressions grows more and more feeble—the most recent events disappear immediately; a visit, a repast, or a business matter is immediately forgotten; the patient relates, for example, the same story several times in one evening.

In time not only single facts are lost, but whole periods of the recent past (forgetting being engaged to be married, or a young husband forgetting he is a father, etc.). Quite early the signs of loss of ethic and esthetic powers are evident: dullness of feeling for occupation, family, and for those mental interests, art, science, etc., that were formerly highly valued, with preference for gross sensual pleasures, eating, drinking, sleeping—doubly significant if the patient were formerly a man of fine feeling, preferring exclusively intellectual enjoyment. In the further course there may be the grossest disregard of good morals, law, the duties of profession, family, and social position. The patient, already deteriorated in his higher mental faculties, does not remark how he seriously compromises himself, and always reacts coarsely and even brutally when relatives, friends, or superiors take him to task for his conduct.

In many patients the great emotional change manifests itself not merely in signs of loss, but in those of increased impressionability; for example, in silly emotionality or in extreme irritability, varying with the cause of the emotion. With the increasing mental cloudiness; with the ethic and intellectual insufficiency, forgetfulness, distraction, laziness, the feebleness of the will, the weakness of esthetic and moral judgment; with the neglect, more and more pronounced, of the most important duties of profession and family; with

the eventual apparition of tendency to debauches and prodigality,—the social life becomes constantly more precarious. It is highly indicative of the power of judgment of the laity to note how falsely and optimistically the activity of such a patient is regarded, and how long he is allowed to remain in a position that is detrimental to himself and his subordinates.

Thus it happens that high military officers retain command in spite of the grossest acts and neglect, in spite of senseless and often barbarous treatment of their soldiers, until finally a maniacal paralytic state of excitement brings deliverance. Thus it happens that in bureaucratic life the valued official that enters the asylum to-day was at his desk yesterday, though for months he had come to the office irregularly, was behind in his work, forgot to finish it, fell asleep in the midst of his work, could not find important papers for weeks, which were accidentally found by the porter in the waste-basket.

A merchant becomes bankrupt. He has been negligent in his bookkeeping for a long time; repeatedly has he left the key in the drawer of the cash box, misplaced letters, and lost valuable papers. In his books are found, for many months back, errors of date and figures, letters and words left out, blots and alterations of the handwriting, etc.

Along with these diffuse and psychic symptoms, there are not infrequently early focal symptoms in the sense of temporary aphasia that is usually amnesic, less frequently ataxic, and coarse awkwardness of acquired movements, due to the loss of motor notions, which strike the patient himself. Possibly occasional awkwardness of movement of the tongue, hesitation in speech, and incapability of repeating perfectly sentences that have been heard depend upon similar conditions. Among special somatic symptoms of the prodromal stage may be mentioned: myosis, inequality of the pupils, tabetic symptoms, inequality and variability in the innervation of the two halves of the face, fibrillary twitchings of the muscles of the tongue, occasional tremor of the extremities, paralgic sensations, slow pulse, congestions, intolerance of alcohol and heat, headache, pressure in the head, vertigo, occasional attacks of fainting, or even apoplectiform attacks followed by several hours of mental confusion, and disturbance of speech—symptoms which disappear without leaving any signs of paralysis.

Early and important disturbances are noticed in the mimicry, speech, and writing. The facial expression often becomes veiled and fatuous. The voice becomes rough and monotonous and less capable of modulation. In reading, expression is lacking and marks of punctuation are not observed. The patient reads incorrectly, omits or substitutes words which he does not see. The speech is less fluent, and hesitating on account of the reduction of the promptness of

association of the motor functions in their relation to sight and hearing in forming the word-pictures. The character of the handwriting becomes changed; frequently the letters are smaller, rarely larger, and at the same time rather angular. It appears, as an analogue to the hesitating speech, as if not written by the same person. Disturbed muscle-sense, muscle-weakness, and ataxia manifest themselves in the incorrect use of the fine and heavy lines of writing, and the writing is out of line, irregular in size of letters, with angular deviations from the line; also there may be addition or omission of syllables and words, or reduplication and confusion to the extent of paragraphia.

Important prodromes are attacks of acquired migraine; such non-hereditary attacks occurring late in life are almost certainly precursors or accompanying symptoms of organic brain disease, especially general paralysis. As a rule, such symptomatic attacks occur in the form of ophthalmic migraine.

Of great significance are attacks of Jacksonian sensory epilepsy. They consist of paresthesias (formication and numbness), which begin in half the face and tongue, spreading to the upper and lower extremities, accompanied by a momentary or prolonged weakness of the motor function of the affected part.

Such attacks may be associated with migraine or aphasia, and are, indeed, the clinical expression of a vasomotor spasm in the corresponding motor and sensory cortical areas.

In rare cases dementia paralytica develops to its height, not out of such a prodromal stage of motor and vasomotor disturbances with psychic defect, but out of tabes dorsalis ("ascending form of paralysis"); or it may develop in the course of mental disease that has long been present ("secondary paralysis"); or it may arise after an ordinary psychoneurosis which terminated in recovery or recovery with defect (with signs of remaining psychic weakness). In the first instance the paralysis seems to be merely a complication of the psychosis, just as if it had developed in a healthy individual. In the latter case the question arises whether the preceding psychoneurosis were not the first act (Schüle), the prodromal stage, of the paralytic disease.

These facts render many cases of the psychoses more difficult of diagnosis, since it must be remembered that in their further course the picture of dementia paralytica may develop (Schüle).

The termination of the prodromal stage is marked not infrequently by an apoplectiform or epileptiform seizure.

The further development of the mental symptoms may at the height of the disease take one of three courses:—

1. Out of the prodromal stage described there may develop maniacal exaltation, which, constantly intensified by external and internal causes, becomes associated with delusions of grandeur and quickly reaches the intensity of furious mania.

The mania may increase still further to the intensity of acute delirium, or, if the patient be brought in the meantime under the favorable hygienic surroundings of an asylum, the mania may subside to the level of maniacal exaltation with delusions of grandeur. This state of excitement gives place to a progressive dementia, during the course of which relapses of maniacal excitement and grand delusions may reappear.

In other cases, owing to the occurrence of a decided remission lasting months or years, a stationary state may follow upon the maniacal excitement with delusions of grandeur. But sooner or later the maniacal excitement with grand delusions again comes on, and the termination is then the same as in the first instance (so-called classic paralysis).

2. Out of the prodromal stage there may develop a hypochondriac or melancholic disease-picture that is overshadowed more and more by dementia, or that apparently passes away with the occurrence of a remission. After a longer or shorter pause the hypochondriac or classic picture of paralysis manifests itself again (melancholic form of paralysis).

In accordance with the fact that melancholic and megalomaniacal delusions may present themselves alternately, a circular form of paralysis has been distinguished.

3. Out of the prodromal stage a primary progressive dementia may develop. In these cases there is neither mania nor delirium of grandeur, but there may be remissions or intercurrent attacks of *furor* (simple demented form of paralysis).

These varieties of the disease-picture from the psychic point of view may be accounted for through the varied anatomic conditions.

The demented forms without psychic excitement depend mainly upon simple primary atrophic changes; classic paralysis with maniacal excitement and grand delusions is to be attributed in the main to inflammatory processes.

The essential thing in this disease-picture is the progressive loss of the psychic and psychomotor functions (dementia) running parallel with the progressive anatomic processes. The progressive loss of memory stretches backward until early impressions are impaired and the patient lives only in the present, mistaking persons and objects, with temporary mental blindness to ocular and auditory stimuli.

Psychic associations become weakened to the degree that real and imaginary occurrences cannot be distinguished.

The great loss of concepts and fixed associations brings about a great reduction of the mental sphere. A pronounced cloudiness of consciousness and actual mental torpor come over the patient, to whom the relation of time and place, of forms and customs, is lost.

The motor control becomes more and more deficient, and thereby results increasing inability to carry out co-ordinate movements even in the simplest acts.

With the changeable psychic course there are many prominent disturbances of a vasomotor and motor kind. Owing to transitory vascular paralysis in the domain of the cervical sympathetic, there are now and then attacks of congestion, vertigo, fainting, and apoplectiform seizures; speech becomes hesitating, slow, indistinct; the movements of the hands become uncertain, awkward; the gait becomes unsteady, staggering, dragging. As a result of apoplectiform or epileptiform seizures the patient may lean to one side. The face becomes relaxed, expressionless; certain branches of the facial become paretic. There is tremor of the tongue, fingers, and lips; the pupils are unequal—at one time dilated, at another contracted.

All these motor disturbances manifest great variations of intensity and extent. At times they are scarcely noticeable, at others very marked, especially after paralytic seizures; and in general they are progressive.

The final stage is the same in all cases, no matter what may have been the peculiarities of other periods of the disease.

The patients have become apathetically demented; they have no consciousness of time and place; their speech is merely an incomprehensible murmuring of syllables, the result of amnesic aphasia and complete paralysis of co-ordination; walking becomes progressively more difficult and finally impossible, though gross muscular power is retained. The hands become useless owing to ataxia and loss of motor ideas, so that the patients must be fed like little children. The patients become unclean, owing to disturbance of consciousness and insufficiency of the sphincters. That the vascular paralysis has reached its height is shown in the livid, cold, edematous extremities, the monocrotic slow pulse, and the abnormal low temperature (due to increased dissipation of heat).

Now and then there are still unilateral or bilateral congestive attacks in the domain of the cervical sympathetic, with temporary excitement, jactitation, verbigeration, sleeplessness; or there may be also apoplectiform and epileptiform seizures.

At this stage there is almost always spasmodic or continued grinding of the teeth. Trophic disturbances now appear. The patient, well nourished up to this time, in spite of large quantities of nourishment, grows thin; the ribs become fragile; hematoma of the ears, decubitus, hypostatic pneumonia, cystitis, occur; and the patient dies of decubitus, which may even open the vertebral canal; or of pyemia, pneumonia, cystitis, pyelonephritis, bulbar paralysis of deglutition, suffocation due to food impacted in the throat, or in an epileptiform or apoplectiform seizure.

The autopsy in cases of classic paralysis reveals the evidence of chronic diffuse disease of the soft membranes and the cerebral substance, with which there are certain changes in the spinal cord. The extent of the chronic inflammatory changes in the pia and cortex corresponds with the distribution of the carotids (frontal lobes and neighboring areas), and but rarely extends to the areas supplied by the vertebral arteries.

Thus the process is essentially a periencephalomeningitis diffusa chronica of the forebrain. In one case the signs of meningitis predominate (cloudiness and thickening of the pia, most intense along the course of the large vessels); in another atrophy of the cortex is more prominent (narrowing of the convolutions with depression, and gaping of the sulci); and the circumstance that the intensity of these processes is not always proportional in the same regions, shows that they are not directly interdependent.

As complications and resulting changes we find pachymeningitis hæmorrhagica, not connected with the territory of chronic leptomeningitis; atrophy and sclerosis of the white substance of the hemispheres; chronic ependymitis of the ventricles, with formation of granulations; hydrocephalus, e vacuo externus and internus; and sometimes also gray degeneration of the optic and olfactory nerves.

As terminal conditions and arising during the agony we find edema of the pia and the brain.

The microscopic findings in the ganglion-cells in the early stages and when the disease has manifested a rapid course consist of cloudy swelling and puffing of the nuclei; at a later stage of clearing up of the nuclei, and occasionally of vacuolation; partial fatty and pigmentary degeneration in some places; and finally of destruction of the nucleus and disappearance of the cell-body, either as a result of parenchymatous disease or as a result of atrophy due to pressure.

The changes in the nerve-fibers are disappearance of the medullary sheath and later of the axis-cylinder, with the formation of amylaceous bodies; this change takes place especially early in the medullated radiating and longitudinal fibers, which serve largely the purpose of association (Tuczek).

In the arterioles and capillaries there is very early dilatation and great proliferation of their nuclei. The walls of the vessels undergo thickening and colloid or hyaline degeneration. Not infrequently in some localities there is new formation of vessels with anastomoses due to development of spider cells. Terminal findings are atrophy and obliteration of the vessels as the result of sclerotic proliferation about them, as well as compression by extravasations,

as a result of which the nuclei of the vessels may undergo fatty or pigmentary degeneration.

The lymph-spaces (intra- and peri- vascular) dilate early and are filled with transudations from the vessels (leucocytes, scattered red blood-corpuscles, colloid masses), by small hemorrhages (pigment-nuclei), as well as by masses of small cells due to the proliferation of the nuclei of the endothelial adventitia (Binswanger). Not infrequently we find cystoid degeneration due to constriction of lymph-spaces.

As a result of all these processes the vessels and parenchyma undergo compression, and with the progress of the disturbance of the lymph circulation the way is prepared for a condition of stasis.

The glia shows proliferation of the intercellular substance; it loses its finely granular transparent appearance, becomes fibrillary (sclerotic), and presents enormous increase of spider cells.

The enormous proliferation of glia nuclei (Mendel) is denied by Binswanger.

The changes in the spinal cord almost always found were first carefully studied by Westphal.

Besides pachymeningitis interna that is not infrequent, and chronic inflammatory changes in the pia, we have here in the main to deal with two processes:—

(a) Gray degeneration of the posterior columns throughout their length, which is always most marked in the columns of Goll, but which may be limited to the cervical portion of them.

(b) A chronic myelitis of the posterior portions of the lateral columns: that is, a proliferative process of the interstitial connective tissue with formation of nuclei, but without atrophy of the nerve-fibers.

This last process is probably a secondary affection of the spinal cord (descending degeneration) resulting from intense disease of the motor cortical areas, which are the trophic centers for these conducting paths.

Special Symptomatology.

1. Psychic Symptoms.—The fundamental features of the whole psychic disease-picture consist of symptoms of psychic weakness, which is shown especially in the superficial character of the emotions; the lack of energy; the enfeeblement of logic, of critical power, and of memory; and in general by the weakness of the intellectual and moral faculties, and the profound disturbance of intelligence.

These defects lend to the psychic disease-pictures that present themselves in the course of dementia paralytica special features which easily permit their differentiation from conditions not dependent upon mental weakness. Under certain circumstances these peculiar signs may indicate to the expert their special origin (dementia paralytica), even when the motor disturbances are temporarily absent.

The maniacal states of paralysis may present themselves in all degrees, from the excitement of simple maniacal exaltation to the extreme of furious mania.

The features which immediately distinguish the maniacal exaltation of paralysis from that of another kind, aside from the suspicious prodromal stage and the presence of motor (myosis is frequent and important) and vasomotor disturbances, are the excessive feeling of well-being, reaching the degree of desultory anticipated delusions of grandeur; the impulse to buy and speculate with senselessness; the undertakings and projects (purchase of enormous quantities of articles); and the tendency to alcoholic, and especially sexual, excesses. The great disturbance of intelligence in these seemingly lucid patients is betrayed in remarkable lasciviousness and thoughtlessness in the satisfaction of sexual impulses; and no less in the ethic indifference of such patients when their attention is called to their conduct. With this there are notable disturbances of consciousness and lapses of memory, as a result of which they forget names and facts, get lost in well-known streets, run into houses in mistake for their own, lose their money while on their senseless excursions, and forget their baggage or umbrellas; and, finally deprived of everything and bewildered, they are possibly brought home by the officers of the law. Not infrequently this state of excitement is accompanied by kleptomania, and the idiotic taking of things and denial of the theft are no less indicative of the distraction, disturbance of consciousness, and weakness of memory of such patients.

As a rule, others now begin to recognize the abnormal state of the patient. Unfortunately the gravity of the disturbance is not yet appreciated, and an attempt is made by travel, water-cures, and amusement to quiet the nerves which are supposed to be merely excited; and in this way the patient has time to waste his money in senseless acts, purchases, and other speculations; to prepare the financial ruin of his family; and by continued cerebral excitement and excesses destroy the last possibility of recovery.

The attacks of furious mania in the paralytic may arise out of attacks of maniacal excitement as a result of the summation of external and internal stimuli. As a rule, however, they occur suddenly, without cause, and quickly reach their acme, to subside again quite as suddenly. They may occur repeatedly during the course of the disease, and even in the stage of final dementia. They last from a few days to a few weeks, are often begun and accompanied by vascular paralysis, and then may be accompanied by fever and symptoms of irritation (grinding of the teeth). They are probably the expression of congestive processes affecting the pia and cerebral cortex.

The mania of the paralytic, in consonance with the profound idiopathic nature of this complication and the great disturbance of consciousness, is usually extremely violent. Raving, crying, blind destructiveness, and smearing are very common symptoms. With this there are great confusion and disturbance of consciousness, and usually also salivation.

The *melancholic states* in the paralytic have the features of a severe organic disturbance, in that they occur as stupid melancholia, or as agitated melancholia with violent fear reaching the degree of panphobia, and are early complicated by signs of vascular paralysis and motor disturbances. The profound disturbance of consciousness; the purely primordial character of the deliria, with nihilistic and frequently also hypochondriac content; the early occurrence of signs of mental weakness; the absence of profound affects, aside from possible organically conditioned fear and panphobia; the demented reaction to these in the form of childish weeping and complaining; the occasional occurrence of ambitious delusions in the midst of the melancholic nihilistic ideas—lend to these conditions peculiar features. In just these cases, motor disturbances (especially myosis, inequality of pupils, fibrillary twitching of the face and tongue, paresis, and grinding of the teeth) and vasomotor troubles (vascular paralysis in the domain of the cervical sympathetic) ordinarily come on early in the history; so that the diagnosis in general is not difficult.

The temperature may also be of importance in differentiating the melancholic and maniacal states of the paralytic from ordinary simple melancholia and mania. Reinhard has shown that temperature of the head higher than that taken in the axilla, extraordinarily wide daily variations of body-temperature, and occasional appearance of slight general rise of temperature without any demonstrable cause point to general paralysis.

Delusions of grandeur are extremely frequent in the course of paralysis. However, they are not primary nor essential nor specific, as is very commonly believed. The manner in which they are expressed upon the basis of psychic weakness is of diagnostic importance, and not infrequently this alone indicates the paralytic basis.

(a) The grand delusions of the paralytic are monstrous, fantastic, far surpassing any possibility, and extend beyond the limits of time and space. The critical power of the patient is so reduced that every thought becomes a wish, and every wish immediately actuality; and his fancy is unbridled in the calling up of ideas of power and

greatness—ideas which in form and import are in pitiable and silly contrast with their details.

Thus, one day a patient announced that last night he had become the Almighty and he would now have blue hair. In order to get to Heaven he would build a cable road. In general these patients live in monstrous ideas of power and wealth; they are Napoleon, Cæsar, and Bismarck, and at the same time God and the superior God; everything around them is gold or becomes gold—even their excretions. One patient declared that he had made streets in all directions over the earth, and at the starting-point of all these streets he lived in a diamond palace and ruled the world. In order to take a walk occasionally on the moon, another elongated his arm till it touched the moon, and he then reached the moon by this path in a wheelbarrow.

(b) Owing to his mental weakness, the patient is unable to reason about or co-ordinate his delusions, and he does not notice the want of logic and contradiction in his delusional ideas.

(c) He lives in his delusional possessions and power without anything like real volition to act in accordance with his false ideas; and even if he rises to this point, owing to his weakness of memory, disturbance of consciousness, and absence of critical power, a puerile pretext is sufficient to turn his attention in another direction. On the other hand, owing to lack of critical power, a lively thought immediately becomes for the patient actuality; and it is not difficult to create in the credulous patient the most nonsensical false ideas.

(d) An infrequent, but very important, diagnostic symptom, because it occurs only in paralytic and senile dementia, is the alternation of primordial delusions of grandeur with those of micromania.

In this case again the extravagance of the delusional ideas is manifest; as, for example, that the patient is a dwarf scarcely an inch high; or that he has died several times, etc.

The content of the delusions of grandeur depends entirely upon the education and social position of the patient. Sometimes traces of the delusions may be found in the latest stage of dementia.

In women delusions of grandeur are less prominent and more modest. They are rather the elaboration of everyday circumstances of life. The patients have many beautiful silk dresses, numerous stockings; very often the false ideas have a sexual coloring—they have given birth to the most beautiful children or they give birth to twins every day, etc.

Hypochondriac Delirium.—The hypochondriac delusions of paralytics also present peculiarities which make it possible to differentiate them from those of ordinary hypochondria. In these cases the element of impossibility and absurdity is not wanting as a necessary

result of the profound disturbance of consciousness, intelligence, and critical power. While the ordinary hypochondriac entertains false ideas that are still within the range of possibility, the delusions of the paralytic are marked by impossibility.

The patients seem to themselves smaller or larger, or three-cornered; their heads or their tongues have been removed; their organs dried up or the passages of the body stopped up; they cannot eat. One of my patients was astounded about his great length, for formerly he had been merely a point. He complained that his brain was now only an air-bladder and had fallen into his abdomen. His abdomen was filled with electricity, and his brain had become the sun (reminiscence of the solar plexus), and with this brain-sun he had set the whole world on fire. Another patient constantly complained that his larynx had slipped into his stomach; that all his intestines had passed away with an enema; his tongue was hanging merely by a thread; his vertebræ were detached, and his blood was poisoned by prussic acid, etc.

These delusions are, in part, primordial; in part, demented and false interpretations of actual sensations (anesthesias, etc.).

Primary progressive dementia, of late decidedly the most frequent form of paralysis, also presents features which distinguish it from ordinary dementia. The sense of self and apperception of the external world are not characterized by the indifference of ordinary dementia, but present an optimistic coloring; there is early profound disturbance of intelligence with reference to time, space, and personality; the patients lead a truly clouded existence. With this, certain outer forms of conventionality, politeness, or soldierly bearing are often long retained and mask outwardly the defect.

The disturbance of memory is also peculiar: while the events of time long past may still be reproduced correctly, those of late events are instantly forgotten (the hour for meals, visits, etc.).

The Remissions in the course of the disease may occur at any time, and last weeks or months or even years. Especially in the initial stages of the disease they are often very marked, and may be confounded with intermissions or recovery. However, there are always signs of mental weakness, defective thought, susceptibility to influence, great irritability, and all sorts of anomalies of the character. With this, the insight of the patient into the abnormality of the period of disease through which he has passed is usually incomplete. Too, the physiognomy usually remains pathologically altered. Motor disturbances and slight attacks of vertigo and congestion occur now and then, and betray the continued existence of grave cerebral changes.

2. Motor Disturbances.—The general characteristics are their great extent, their incompleteness, their variations in intensity and

extent, and their progressiveness, with the character of disturbance of co-ordination.

They are observed in speech, in the voice, the ocular muscles, the muscles of facial expression, and in the extremities. Speech and voice usually suffer first.

The disturbance of *speech* is essentially a disturbance of co-ordination (stumbling on syllables): as a result of the demented conception of the movements necessary for the entire word and defect in the auditory image of the word, or partly as a result of disturbance of the co-ordinating mechanism of articulation in the cerebral cortex, the formation of the word as a unit takes place only in an incomplete manner, while the formation of the sounds and syllables takes place without trouble (Kussmaul), or only vowels and similar consonants are mistaken one for another.

In the course of the disease there may be stammering, stuttering, and drawling, as well as temporary aphasia in connection with fluxionary congestive attacks; and finally paralysis of the tongue may occur after apoplectiform seizures.

During the final stage the loss of speech is due to the combined effect of dementia, aphasia, and complete paralysis of co-ordination. During rest and in the morning the disturbances of speech are more pronounced, as a rule; after the speech-mechanism has been in activity for a time—as, for example, during excitement—there is an increased energy in it, and under such circumstances the disturbance of speech may at first diminish.

The aphasia is in the beginning purely amnesic, but further in the course frequently ataxic aphasia and paraphasia are observed. The articulatory disturbance in paralytics depends, in part, upon ataxia of the lips (associated movements, fibrillary twitchings of the orbicularis, of the levator labii superioris alæque nasi, levator menti, and later also paresis of the upper lip), as a result of which the differentiation of the labials and dentals is interfered with *(v, w, b, p, u, s);* and when the lips are too much pressed together the speech may even be temporarily arrested.

The faster the patient speaks and the more excited he is, the more distinct is the labial ataxia, which the patient can conceal in a measure when he opens his mouth as little as possible. The glosso-articulatory disturbance of speech co-ordination, which occurs probably only in dementia paralytica and which is called "syllable stumbling," is more important. In this disturbance there is misplacing or mixing of syllables and letters, which is especially evident when the patient reads aloud (Rieger).

With this, single syllables are often swallowed or only incompletely pronounced, because the innervation-impulse to pronounce the preceding syllable continues, or that for the following syllable occurs too early; or a single syllable is repeated (stuttering), or drawn out (drawling speech), because the

movements for pronunciation in the first case are spasmodically repeated, and in the second case the speech-mechanism is insufficiently and incorrectly innervated.

In the final stages not infrequently speech is drawling and slowed, because the patient instinctively seeks to overcome the difficulty of co-ordination by more prolonged and energetic innervation. However, scanning speech never occurs. The disturbance of co-ordination is also shown frequently in that syllables are unequally and incorrectly accented, some being subdued, others unusually accented.

In spite of extreme disturbance of speech, the muscles of the tongue and lips are still capable of performing all other grosser functions.

The disturbances of handwriting (Erlenmeyer) occur early, and are important because they point to diffuse disease of the cortex, and especially to dementia paralytica, though, as Schüle proved, cases of paralysis occur in which there is no disturbance of handwriting. When they do occur Erlenmeyer rightly emphasizes their diagnostic importance with reference to the form and also with reference to the improvement or progress of the disease.

Alterations in the handwriting are, according to the author mentioned, partly psychosensorial (dementia, loss of memory-pictures and motor ideas), partly graphomechanical (ataxia combined with tremor). In the first case the content of the written sentences suffers as a result of omissions, unnecessary repetitions, and the misplacing or mistaking of letters, syllables, and words (amnesic or ataxic agraphia and paragraphia). The patient's disturbed intelligence prevents recognition of the written errors. In the second case only the graphic form, the handwriting, suffers; the psychic disturbance of writing precedes, as a rule, the graphic. In the final stages, with the loss of other ideas of movement, the power to write is absolutely lost.

Weiss, and later Rahhas, have called attention to a peculiar kind of disturbance of reading. It approaches paralexia very closely, in that paralytics when they read aloud under certain circumstances pronounce the greatest nonsense, partly in the form of distorted words, partly in words of new formation, instead of the printed text, and that without remarking it. Since this disturbance of reading occurs often very early, even before there are other signs of aphasia and disturbance of speech, and probably only in paralysis, it may have diagnostic value.

The vocal muscles are often early disturbed in their functions by ataxia and paresis (Schulz, Rauchfuss), and thus the voice frequently becomes hoarse, rough, and veiled, takes on a bleating timbre, and breaks easily in singing. As a result of disturbance of innervation of the soft palate, it may also become nasal.

The ocular muscles, especially in the tabetic form, sometimes present transitory paralysis with diplopia; nystagmus and ptosis are also observed as temporary symptoms.

Anomalies in the innervation of the iris are frequent. They are only significant if they have arisen during the disease and intra-ocular causes can be excluded.[1] Not infrequently in the beginning, especially during the maniacal stage, there is myosis that disappears under atropine. More frequently there is unilateral mydriasis, which does not yield to calabar. But the inequality of the pupils and the changes and disturbances of the innervation of the iris are especially important.

In the domain of the facial there are often very early changing pareses limited to single branches, especially to those of the lips. Widespread paralysis of the face occurs only temporarily after apoplectiform and epileptiform seizures. An early symptom is fibrillary twitching of the facial muscles, especially of those about the mouth, which occurs notably in connection with movements of expression and articulation, and which temporarily may become intensified to the degree of convulsive tic. In the advanced stages of the disease the motor portion of the fifth nerve is also implicated. As a result of this there are peculiar automatic spasmodic movements of mastication and grinding of the teeth. In the final stages of the disease the muscles of deglutition may also be temporarily insufficient, with danger of suffocation.

The motor disturbances in the extremities are partly cerebral and partly spinal. The loss of cerebral activity reveals itself in tremor, muscular insufficiency, ataxia, and sometimes also in intention-tremor, but more particularly in the lack of motor ideas and of correct valuation of the muscle-sensations. This causes acquired movements to become heavy, awkward, or at least lacking in grace. The gait seems badly unbalanced. To these, other disturbances are added: a result of changes in the conducting paths in the spinal cord.

There are cases of exquisite tabetic gait with loss of the deep reflexes, usually at the same time associated with loss of the oculo-pupillary reflexes, evidently due to gray degeneration of the posterior columns. More frequently the gait is slightly spastic, or at least stiff and mechanical, with striking of the heel. In these cases the deep reflexes are increased, and sometimes even foot-clonus can be elicited. This disturbance of the gait is found, in the main, in the classic form of paralysis, and is possibly due to disturbed reflex inhibition, dependent upon hydrocephalus, as well as upon changes in the posterior portions of the lateral columns of the cord. The state of the deep reflexes has been studied by Crump, Beatly, Bellencourt, and others. The first observer mentioned found in 65 cases that the patellar reflexes were wanting

[1] Pupillary anomalies (central) may long precede other signs of paretic dementia and tabes; they are often early signs of the possible development of these diseases, for the Argyll Robertson pupil is more and more regarded as a sign of syphilitic infection.—TRANSLATOR.

18 times and exaggerated 26 times. The second observer in 68 cases found the patellar reflexes absent 11 times and increased 43 times.

The *apoplectiform* and *epileptiform* seizures are very important episodic manifestations. The apoplectiform attacks are incomplete, limited to a momentary loss of consciousness with reduction of innervation; or they resemble perfectly the apoplectiform attack with hemiplegia, from which they differ only in the rapid disappearance of the paralysis and the simultaneous elevation of bodily temperature.

The epileptiform attacks may resemble attacks of genuine epilepsy. More frequently they are only partial, unilateral, and not accompanied by complete loss of consciousness. Besides, they last long, even hours or days; in rare cases they are limited to momentary attacks of vertigo. These attacks very frequently are due to vascular paralysis with violent cerebral congestion and elevation of the temperature of the head 1.5° C. above that in the axilla (Reinhard). After these attacks there are frequently inflammatory affections of the lungs (catarrhal and hypostatic pneumonias), the nature of which (whether mechanical and due to the passage of the secretion of the throat and mouth into the air-passages, or neurotic and due to vascular paralysis in the domain of the sympathetic) is still in doubt. Rare forms of seizures are tetaniform and hystero-epileptic attacks.

The seizures may occur in any stage of the disease. They do not occur in every case, though they are very frequent; as a rule, they are frequently repeated if they have once occurred in the disease. After such attacks the motor disturbances are increased, and often for a considerable period there is left paralysis of the facial, hypoglossus, and hemiparesis, which, if they follow convulsions, always affect the side that has been affected in the seizure. As a rule, these paralyses disappear in a few hours or days. After such seizures the mental condition is always worse, and the mind never gets back to its former level.

These seizures are certainly not due to gross anatomic changes. The apoplectiform attacks probably are due to temporary vascular paralysis with consecutive regional edema in certain portions of the motor area.

The epileptiform attacks are probably due to recurring irritative processes in the motor areas of the cortex. This irritation may be direct (Bechterew calls attention to the frequency of cysts between the arachnoid and the cerebral surface) or peripheral (as, for example, overfilling of the bladder), the influence of which, in the functional state of excitability in the motor areas, is comprehensible.

3. Vasomotor Disturbances.—These are early revealed in the monocrotic, slow character of the pulse. In this disease there is a progressive vascular paresis which temporarily may lead to total

regional vascular paralysis in the domain of the cervical sympathetic (often unilateral like that caused by Claude Bernard's sections), with attacks of vertigo and apoplexy, local and general elevation of temperature, unilateral sweating, etc.; and it may also appear in the form of circumscribed vascular paralysis in the skin (meningitic spots—Trousseau). In the final stage this vascular paralysis is general, and causes, along with neuro-paralytic hyperemia in the lungs, bladder, intestines, etc., cyanosis, coolness, and edema of the skin, and subnormal temperature.

4. Among the Trophic Disturbances are to be mentioned herpes zoster as not infrequent; bloody sweating, first observed by Servaes; rapid loss of weight in the final stage; fragilitas osseum with increase of phosphates in the urine; and the final decubitus.

5. Compared with the vasomotor and motor disturbances, the disturbances of sensibility play but a small part.

Not infrequently in the beginning there is headache; lancinating pains occur in the extremities only in the tabetic form. In the advanced stages of paralysis, sensibility is reduced, but exact investigation of it is difficult on account of the dementia and disturbed consciousness. In many cases tactile sensibility is retained and sensibility to pain absent. Under such circumstances there is danger of self-mutilation, and such patients require careful watching. There have been cases in which analgesic paralytics have burned themselves most seriously, bitten out the tongue and chewed the morsels, or gone about with compound fractures of the leg.

6. Sensorial Disturbances.—In dementia paralytica hallucinations are remarkably infrequent, so infrequent that, when they occur, doubt as to the correctness of the diagnosis should be entertained, and the possibility of alcoholic paralysis considered. In the classic form of paralysis there may be visual hallucinations, especially during states of excitement. Fürstner has shown the existence of interesting defects in the visual cortical areas in the form of psychic blindness, which sometimes improves, but, as a rule, advances to cortical blindness. Amblyopia due to infracortical disturbances in the optic tracts is not infrequent, both as a symptom in the prodromal stage and during the course of the disease. Along with negative findings the ophthalmoscope reveals neuroretinitis and peripapillary edema. Flemming, Westphal, Simon, and Magnan have observed cases of anosmia. In a few cases gray degeneration of the olfactory nerves has been found.

7. The Sexual Desire, in the initial stages of the disease, as well as during the episodic states of excitement, is usually increased,

sometimes also perverse; in the final stages of the malady libido and sexual power are usually destroyed.

8. Paralytic dementia presents deviations from the normal variations of temperature.

Reinhard found, on the whole, that the noon and evening temperatures were higher than the morning temperatures. Not infrequently there are episodic increases of bodily temperature, which, however, are not to be taken as evidence of the inflammatory nature of the disease without further consideration, but rather are to be explained as temporary functional disturbances of the temperature centers in the cerebral cortex. Fever (40° C.) that sinks quickly after the emptying of an overfilled bladder, or of the intestines, is to be regarded as nervous; as are hyperpyretic temperatures during the agony (45° C. in a case in which I personally used the thermometer).

Elevations of temperature to 40° C. are quite common in the states of excitement of the paralytic, and also as accompanying manifestations of congestive, apoplectiform, and epileptiform seizures (vasomotor paralysis in the domain of the cervical sympathetic). They take place under such circumstances from ten to twelve hours before the attack (Reinhard), and outlast these several hours or days. Krömer has observed abnormal depression of the body-temperature, especially in the hypochondriac, tabetic, and demented forms of paralysis.

In the final stages of the disease the temperature is subnormal. Differences in temperature of the two sides of the body reaching as high as 1° C. are not infrequent, especially after seizures. Just before the agony there may be collapse temperatures as low as 24° C., with subjective feeling of well-being.

The *diagnosis* of dementia paralytica is easy when the disease is developed, and when a history and knowledge of the course of the disease are obtainable.

Though no single symptom is pathognomonic of the disease, yet on the mental side, the foundation of psychic weakness upon which, from the beginning, the varying psychic conditions develop and run their course, and the peculiar manner of development and grouping of the symptoms, vasomotor and motor, afford sure indications for the diagnosis. With this there is the development out of a prodromal stage, indicating a peculiar, or at least grave, idiopathic brain disease, and the progressive changeable character of the various series of symptoms, with tendency to remissions.

The differentiation of the melancholic and maniacal pictures, of the delusions of grandeur, and of the episodes of furious mania, from the non-paralytic forms has already been considered, as well as the differentiation of certain forms of chronic alcoholism (*vide* page 537). With reference to focal brain diseases with mental disturbance (dementia after apoplexy, encephalitis), it is to be remembered that the motor disturbances of general paralysis are not paralysis, but dis-

turbances of co-ordination, general and not circumscribed in their extent, varying in intensity and extent, and that they are progressive and not stationary.

The differential diagnosis from certain cases of cerebral syphilis may be difficult, on account of the existence of diffuse degeneration of the vessels and tissues. Aside from the general symptoms indicating cerebral syphilis, the infrequency of delusions of grandeur, the special prominence of paralysis of single cranial nerves, and the early age in cerebral syphilis often afford indications.

Among the most difficult tasks is to recognize paralysis in those rare cases in which seemingly an ordinary psychoneurosis has formed the prodromal stage.

In harmony with Schüle, I have observed cases in which there was no symptom to indicate threatening paralysis, and in which any suspicion of its existence had to be abandoned, and yet in which, after apparent or actual subsidence of the psychosis, the picture of paralysis developed. With reference to psychoses under such circumstances, in individuals of mature years that are high livers and given to great mental activity, there is suspicion of paralysis if symptoms of change of character and cerebral asthenia preceded the psychosis, or if the psychosis presents severe organic features in its course: as a melancholia, for example, noticeable for absence of affect with nihilistic delusions; or a mania presenting signs of grave cerebral irritation reaching the degree of acute delirium episodically. The suspicion is proportionately strengthened if states of stupor, vascular spasms, and attacks of vertigo be intercurrent; if lapses of memory and judgment be noticeable; if without somatic cause elevation of temperature occur; and finally if the subsidence of the psychosis be not entirely satisfactory, but leave signs of mental weakness behind.

No less difficult and still prognostically very important, is the differentiation of mere functional cerebral exhaustion (cerebral neurasthenia) from the initial stage of paralysis.[1]

In the beginning the two diseases may be almost exactly alike, and, indeed, it cannot be doubted that paralysis may develop out of cerebral neurasthenia if the blood-vessels are abnormally permeable; and thus the vasomotor cerebral neurosis may become an organic disease.

At any rate, in such doubtful cases the etiology must be considered above all. The exciting causes (mental strain, mental shock, etc.) may be the same in both diseases, but there is a difference between the predisposing con-

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[1] A very valuable aid in the differentiation of dementia paralytica from so-called neurasthenic conditions is afforded by examination of the cerebrospinal fluid (lumbar puncture). Lymphocytosis and the presence of an abnormal quantity of serum-albumin are indicative of disease-processes affecting the meninges, and in a doubtful case would afford reliable evidence of disease of the central nervous system.—TRANSLATOR.

ditions, which in neurasthenia consist essentially of neuropathic and usually hereditary taint, but which in paralysis are acquired conditions like rickets, head injury, alcoholism, and especially syphilis. If the latter predisposing causes are present in men at the height of maturity who have been high livers, and at the same time under mental strain, and signs of cerebral neurasthenia are presented, then paralysis should be suspected rather than cerebral neurasthenia. There must be even greater care if, besides, tabetic symptoms can be demonstrated. On the other hand, if suspicious symptoms occur at an early age, up to about 35, and if, besides, the individual is nervously predisposed and has not been exposed to excesses in *potu et venere*, and is free from syphilis, then the weight of opinion should be in favor of mere cerebral neurasthenia.

With the etiology of the case, the manner of its development is of importance. An almost sudden giving out of the cortical activities, especially if it follow upon a mental shock, speaks for cerebral neurasthenia, while an insidious or interrupted development of the symptoms speaks for paralysis. Continued marked change of character, signs of loss in the ethic sphere, marked hypochondriac depression with absurd explanation of it, speak for paralysis; simple emotionality, irritability reaching the intensity of uncontrollable affects, abnormal egotism reaching the degree of quarrelsomeness, and nosophobic ideas of brain softening with consequent dysthymia, belong to cerebral neurasthenia. Weakness of memory occurs in both diseases, but the loss of memory in paralysis is more marked, more lasting, and progressive, and is an actual loss—that of the asthenic is objectively out of harmony with his complaints, changeable in its intensity, merely a phenomenon of fatigue (with virtual retention of memory), which during phases of mental exhaustion may manifest itself in decided difficulty of writing and speaking that may attain the degree of aphasia. If we accept temporary and changeable difficulty in the activity of the psychic powers, the patient suffering with cerebral neurasthenia does not present disturbance of intelligence, any more than clouding of the sensorium. Such indications of actual loss, however, occur often very early in paralytics, are painfully evident, and cause him to be impossible in society. The patient suffering with cerebral neurasthenia, since he thinks himself demented and uncertain in social intercourse, constantly fears that which actually takes place in the paralytic; but since he is virtually intact, offense against good manners and defects in general—writing and conduct—do not occur. He makes slips of the pen, but he notices and corrects the errors due to fatigue, in contrast with the paralytic.

Obstinate sleeplessness in spite of all hypnotics, falling asleep in inappropriate places, in society during the daytime, afford ground for suspicion of paralysis.

Apoplectiform and epileptiform attacks, attacks of aphasia, temporary monoplegias, paralysis of the tongue with paresthesia and ophthalmic migraine as recent disturbances, do not belong to neurasthenia, but indicate organic disease. Phosphaturia is very common in the initial stage of paralysis; uraturia and oxaluria belong to neurasthenia.[1]

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[1] Early polyuria of short duration is a suspicious symptom in non-hysteric patients.—TRANSLATOR.

The *duration of the disease* in general is very variable and difficult to prognosticate, for the period at which the prodromal changes came on is difficult to ascertain. On an average, the disease lasts about three years. In aged persons and in females it lasts decidedly longer. Cases due to mental exhaustion and head injury seem to have a longer course than those due to excesses in *baccho et venere.*

Of bad omen—*i.e.*, indicating a more rapid course—are occasional fever, early occurrence of disturbances in the handwriting and movements, early and frequent paralytic or other seizures. The hypochondriac and demented forms permit expectation of a slower course than does the classic form. But the course and duration in a given case cannot be prognosticated; for even in the advanced stages remissions and arrest lasting weeks or months are still possible. In rare cases dementia paralytica ends within a few months or a year (acute or galloping paralysis).

As in acute delirium, we have here to deal with an invalid brain. A new excess, any psychic or physical trauma (insolation, etc.), may cause the outbreak of the disease. The symptoms of loss and irritation are essentially those of the chronic form, only they develop and run their course in a stormy way, corresponding with the acuteness of the anatomic process. The stage of incubation lasts a few days or weeks (fluxion, headache, sleeplessness, mental dullness, intellectual and, especially, ethic defects, great emotional irritability). Then one day furious mania breaks out, with profound disturbance of consciousness, wild flight of ideas, senseless grand delusions, often intermixed with those of micromania. With this, there is violent congestion, often fever, fibrillary twitchings of the muscles reaching the degree of slight convulsions, grinding of the teeth—all as signs of severe cerebral irritation. During the course there is very marked forced movement, with smearing, tearing, and destroying. After a few days or weeks there is quiet, but there remains profound dementia, paresis, ataxia, aphasia, hesitating and stumbling speech, as signs of the profound injury the motor areas of the cortex have undergone. With renewed signs of cerebral irritation (outbreaks of furious mania, epileptiform and apoplectiform seizures) the mental destruction is completed within a few weeks or months. This is followed by physical decay—marasmus, decubitus, reduction of general innervation, finally involving the vital centers, and thus the fatal termination is prepared, which takes place in profound exhaustion or sometimes in convulsions.

The striking findings postmortem are: Congestion, adhesion of the pia to the cortex, which is gray-red, with local areas of softening, especially in the central convolutions. Capillary apoplexies are not infrequent. Microscopically the lymph-sheaths appear filled with white and red blood-corpuscles, the glia thickened (enormous multiplication of spider cells and nuclear proliferation), and the ganglion-cells are found in a condition of cloudy swelling and distension.

The *prognosis* of dementia paralytica is unfavorable, in spite of rare recovery, which, however, may always be called in question,

either with reference to the diagnosis of the disease or the fact of recovery (simple remission). We cannot, however, with absolute certainty pronounce a sentence of death from a medical standpoint on such patients.

In modern literature cases of recovery which bear the most rigid criticism are increasing in number. In most cases, however, the reports are published too early to allow a decisive judgment; or the recovery was not pure, states of mental weakness remaining; or the condition was one merely of intermission, the disease recurring and not beginning anew, but where it left off, the intermission having been merely a latent period.

Tnese objections hold good in great part for the cases reported by Voisin in his monograph (pages 192 and 521), and for the numerous cases (30) reported by Doutrebente, in which recovery was frequently the result of profuse suppuration, abscesses, injuries; and in part also for the cases of recovery reported by Gauster.

Cases of undoubted recovery have been published by Flemming (*Irrenfreund*, 1877, H. 1-2), Schüle (*Zeitschrift für Psychiatrie*, 32, H. 6), Gauster (*Psychiatrisches Centralblatt*, 1875, 1-2), and Oebeke (*Zeitschrift für Psychiatrie*, 36, H. 6). See further *Annales médico-psychologiques*, 1879, May (*Irrenfreund*, 1879, 8); Stölzner, *Irrenfreund*, 1877, 8; Nasse, *idem*, 1870, 7; L. Meyer, *Berliner klinische Wochenschrift*, 1878, 21. Nasse (*Zeitschrift für Psychiatrie*, 42, H. 4), following Oebeke, gives all the literature of the subject since 1879, and from his own rich experience makes the very discouraging statement that since 1872 he has never seen a case of recovery, and that, of his 7 cases of recovery reported in 1870, 6 had relapses and died of severe cerebral seizures. Only in a single case was the recovery maintained, though during the disease there was no disturbance of speech, so that the diagnosis is doubtful.

In so severe a disease, that grows more and more frequent, its *etiology* is of very special interest.

Modern investigation has recognized the fact that general paralysis stands in very close relation to syphilis, and, the more carefully the history of patients is studied, the higher is the percentage of paralytics that have certainly or probably been infected with syphilis. Hirschl ("Jahrbuch für Psychiatrie," xiv, 3) found that of 175 male paralytics in my clinic 98 (56 per cent.) had previously had lues and 44 (25 per cent.) had probably been infected.

With reference to the remaining 33 cases (19 per cent.), in whom infection was entirely doubtful, this observer notes that in 63 cases of late forms of syphilis in Lang's service in Vienna only 54 per cent. could be proved with certainty to have had lues, 9.5 per cent. probably had been infected, and in 36.5 per cent. there was no proof of early luetic disease; so that in these 33 cases of paretic dementia the possibility that primary infection was overlooked cannot be denied; the more because paralysis in those that have suffered with syphilis may

not develop until 25 years after infection, although, as a rule, the outbreak occurs from 5 to 15 years later.

That previous syphilis is the most important predisposition for the subsequent development of paralysis is shown by its infrequency in children and youthful persons, in whom it can almost without exception be referred to lues, especially hereditary; its infrequency in women in the higher classes of society and in the clergy; its great frequency among single men of large cities, especially in the army; its great frequency in cosmopolitan centers of population, in contrast with the country (8 to 1); its striking infrequency in regions where lues occurs only sporadically (Rabow—Canton Wallis); the relative difference between its occurrence in men and women (4-3.5 to 1), and the fact that it is exactly parallel with the occurrence of lues in the population for the two sexes.

The age at which paralysis develops (35 to 50) is immediately explained when it is remembered that luetic infection occurs, for the most part, between the ages of 20 and 30, and that, on an average, the outbreak of paralysis occurs in from 5 to 15 years after infection.

Whether paralysis occurs exclusively in those that are syphilitic is at the present time no more surely determined than the question by means of what process lues exercises its pathogenic influence. It has been assumed (Mendel) that, like syphilitic interstitial hepatitis, it induces interstitial encephalitis, or that it causes minute changes in the cerebral vessels, as a result of which they become abnormally permeable. Others assume the cause of the tissue-changes in paralysis to be a toxin (Strümpell) or a ferment-like poison developed under the influence of lues (Möbius—paralysis a "metasyphilitic" disease). It is certain, however, that paralysis is not a specific (luetic) brain disease either in the sense of a gummatous or arteritic process, which explains the failure of antisyphilitic treatment.

Undoubtedly the preceding luetic infection is the most important predisposing cause of paralysis, and in contrast with the majority of the psychoses it is to be regarded not so much an hereditary as an acquired and preventable disease.

But only a certain percentage of those affected with lues develop paralysis, and this supports the assumption that there are other predisposing causes which lessen the resistive power of the brain, as well as accessory causes.

Hereditary taint plays but a subordinate rôle (about 15 per cent.) in contrast with an acquired neuropathic state due to other causes. In relation to this point I found the rachitic cranium remarkably frequent.

Various observers have been struck with the frequency with which a tendency to cerebral congestion and apoplexy is found in the ancestry and blood-relations of paralytics.

Among accessory causes may be mentioned physical and mental over-exertion, especially in positions of great responsibility; dissolute life, especially continued alcoholic and sexual excesses, the first of which, however, are decidedly overestimated; and sometimes also head injuries and caloric influences.

In women the changes incident to the climacteric are very frequently the exciting cause of the outbreak of the disease.

A very remarkable fact is the occurrence of paralysis in childhood and youth; it was first recognized in 1877. More than 50 cases have now been reported. At the present time in my clinic there are 4 infantile paralytics (3 males, 1 female).

Alzheimer has recently described these "early forms of paralysis." Of 41 cases which he has collected from literature and in his own practice, there were 20 males and 21 females. In 3 cases the disease began at the age of 10. From this time on its frequency increases, being greatest from 15 to 16 (puberty); it then diminishes up to the twenty-second year. The average duration of the disease is $4\,^1/_2$ years (in 5 cases over 7 years). Hereditary taint existed in 86.6 per cent. of the cases; and general paralysis in the father and mother is remarkably frequent. In 91 per cent. of the cases hereditary lues was certain or probable.

One of my patients, a student, aged 23, had been suffering two years with dementia paralytica, which was said to have arisen after overwork for examinations. His father developed the same disease at the age of 49. It was established that the father, at the time of the conception of this son (the eldest) was still suffering with lues. The wife and two younger children of this father are free from lues and have thus far been healthy.

The noteworthy clinical peculiarities of this early form of paralysis may be stated, in accord with Alzheimer, to be: exclusively primary demented form of the disease (episodic disease-pictures of different kind not excluded); insidious course as in the adult; interference with further evolution of the body; very frequent paralytic attacks; early and often very marked symptoms of paralysis; very frequent loss of the patellar reflex and optic atrophy, and especially tabetic symptoms.

In the actual state of our knowledge of the disease clinically, anatomically, and etiologically, the necessity of learning the pathogenesis of this fearful malady, which is becoming more and more frequent, is imperative.

The *caput mortuum* of the disease process in general paralysis and the anatomic substratum of the clinical symptoms of loss is cerebral atrophy. This differs neither macroscopically nor micro-

scopically from atrophy due to other causes, except in its localization (almost exclusively in the forebrain) and its intensity; for the weight of the brain may be reduced to the sixth part of its normal weight, while atrophy of any other kind rarely exceeds a loss of one-twentieth part. How this excessive cerebral atrophy arises cannot be decided. It is, in the next place, remarkable that the domain of the vertebral arteries escapes almost entirely. For those that accept the hypothesis that paretic dementia is a metasyphilitic disease, the elective power of the hypothetic toxin upon the vascular area of the internal carotid, somewhat analogous to the elective choice of the posterior columns in the disease-process of tabes, is inexplicable. On the other hand, it is to be urged that many of the injurious influences which assist in the development of general paralysis (mental over-exertion, emotional excitement, sexual excesses, etc.) first and most intensely affect the forebrain.

Processes affecting the vessels play a most important part in the disease-process of general paralysis.

Many etiologic influences in the causation of paralytic dementia (mental exertion, especially those associated with emotional excitement) are alike in this, that they lead to functional hyperemia of the forebrain, and more readily during biologic phases, when the brain is naturally in a state of physiologic turgescence (full maturity) or disposed to congestion (climacteric).

This possible functional hyperemia, owing to continuance of irritation or to the continued activity of influences which paralyze the vasoconstrictors (alcohol, heat-stroke, injury, etc.), passes over into neuro-paralytic hyperemia. All depends on whether the vessel-walls are intact in structure—that is, abnormally permeable—or not. It is certain that lues changes the vessel-walls, and probably renders them abnormally permeable. The same is true of other infectious diseases, severe general diseases, chronic intoxications (alcohol), and probably also of rickets. But the disease-process in general paralysis as such early leads to changes in the vessel-walls (hyaline) which favor the increase of permeability of the vessels.

The necessary result of this abnormal permeability is transudation of the elements of the blood into the perivascular and interadventitial spaces in the form of colloid and albuminous materials, white and a few red blood-corpuscles. As a result there is a decided lymph-stasis, which is increased by scattered extravasations and proliferation of the nuclei of the endothelial adventitia.

Since these lymph-spaces surround the ganglion-cells and nerve-fibers, and form a network throughout the whole brain, there is

necessarily a marked lymph-stasis throughout the brain itself, which, directly through pressure upon the nerve-elements and indirectly through compression upon the capillaries, interferes with the vitality of these and may lead to necrobiotic changes.

Since the perivascular adventitial spaces of the brain communicate with the epicerebral spaces,—that is, the lymph-spaces of the pia,—stasis also develops there. Thus arises the condition favoring tissue-changes in the pia (clouding, thickening of the tissue, destruction of lymph-channels) as well as attachment of the pia to the cortex, as a result of which there is a backward lymph-stasis in the brain. In rare cases the disease of the pia is primary and actually inflammatory (traumatic, gummatous meningitis), and in such cases the lymph-stasis develops from it centrally.

Concerning the significance of the processes that take place between the initial neuro-paralytic hyperemia with its resulting lymph-stasis and the final general atrophy, investigators are by no means in accord.

While the older authors—more recently Mendel, Magnan, Wernicke, and others—look upon it as inflammatory, the idea that it is a simple atrophy and only secondarily inflammatory gains more and more adherents (Schüle, Binswanger).

It is probable that this divergence of opinion depends upon the fact that paralysis is only a clinical syndrome, and that various kinds of anatomic disease-processes, of which the uniform result is cerebral atrophy (dementia), cause differences in the clinical course, especially with reference to psychic symptoms.

It is possible that mild cases that run their course without symptoms of irritation in the sense of maniacal excitement, mania, and grand delusions are due to anatomic processes bringing about primary atrophy, while the cases of "classic paralysis" depend upon inflammatory changes.

The reason for the fact that modern opinion inclines to regard the disease-process of general paralysis as primary and a simple atrophy is probably that the disease has changed in character, and at the present time is seen most frequently in the form of simple dementia.

At the present time the problem for investigators anatomically and clinically is to bring into accord the actual differences found anatomically and the various clinical pictures; but only cases that come to autopsy in the early stages of the disease can be considered for this purpose; for in the final stages of atrophy the anatomic findings and the clinical manifestations are quite in accord.

Moreover it is improbable that the disease-process of general paralysis is exclusively atrophic or inflammatory; for, when the process begins as a primary parenchymatous atrophy, secondary irritation and proliferation take place as a result of the irritation by waste-products of nerve-tissue, while, on the other hand, a primary "interstitial encephalitis" leads to secondary atrophy (pressure) of the nerve-elements.

The process of atrophy—primary degeneration analogous to the disease-process of tabes (Schüle), parenchymatous and inflammatory changes (Wernicke) like those of polyneuritis—may be theoretically explained as due to early exhaustion as a result of excessive functional demands on ganglion-cells and nerve-fibers that are originally lacking in resistive power; possibly also as a result of toxic influence (syphilitic toxin?). Besides this there might be processes in the nature of atrophy from pressure due to blocked lymph-channels in surrounding areas.

The interstitial encephalitis of cases that are to be regarded as inflammatory may possibly be due to the chemic irritation of specific material (like that of interstitial hepatitis), and in no small proportion to irritation caused by elements separated from the blood and waste-products of the nerve-tissue.

Treatment.—It seems almost superfluous in a disease so pernicious to speak of combating its fundamental process. All patients afflicted with this disease, with the exception of a few cases that are usually doubtful as regards diagnosis, die. This, however, does not absolve us from the duty of considering the treatment of this grave cerebral malady. It is probable that the discouraging mortality is due to the fact that the disease is recognized too late; that the patient, instead of coming into expert hands at a proper time, is made the object of misdirected weakening treatment (bloodletting, cold-water cures, etc.), and is allowed the time to destroy himself by mental, alcoholic, and sexual excesses. Owing to the circumstance that knowledge of dementia paralytica is becoming more widespread among general practitioners, we may hope for its early recognition—the first requisite of treatment.

If the diagnosis of paralysis has been made even with probability, then all possible means to restore a normal condition of nutrition and circulation in the brain must be employed.

In the first place, occupation should be given up for a quiet life in the country; the patient must be protected from caloric influences, and alcohol and strong tea and coffee interdicted, with limitation of smoking. The food should be rich, but unirritating; the bowels must

be cared for, and lukewarm baths from 62° to 72° F. ordered. These indications are best fulfilled in a sanatorium, which affords also another important advantage in the constant medical attention of a specialist.

The frequent and obstinate sleeplessness in the beginning is best overcome by means of prolonged baths in the evening, wet packings for from one and a half to two hours, and careful galvanization of the head (Löwenfeld). If hypnotics are required, then resort may be had to bromides, with phenacetin and codeine, or eventually trional, paraldehyde, or amylene hydrate; but chloral hydrate and its preparations, which are to be regarded as decidedly inimical to the vessels, should be avoided.

Many physicians, when the diagnosis of paralytic dementia is clear, having in mind the etiologic relation between it and syphilis, advise antiluetic treatment. So far as the treatment with mercurials is concerned, I cannot too emphatically advise that they be avoided, for paralysis is not a specific disease of the brain, and experience shows that in this disease mercury often does harm and never does any good. Mercurial treatment should be limited to the few cases in which there are signs of lues or recrudescent evidence of it during the beginning of the paralysis.[1] On the other hand, iodine seems to render the course of many cases of paralysis milder and more protracted, either because it increases metabolism, which may be helpful for absorption and circulation in the obstructed lymph-channels, or because it may prevent the development of proliferative processes in the brain. From 1 to 1.5 grams of iodide of sodium should be given for months.[2]

If congestive symptoms occupy the foreground, ergot (0.3 to 0.5 gram of the aqueous extract) may be exhibited continuously for a long time, and cold to the head and nape of the neck, and flowing foot-baths are indicated.

If the disease has reached its full development, the important question arises whether and when to send the patient to an asylum. Under all circumstances he requires the most careful nursing and watching.

The depressed and hypochondriac paralytics belong without exception in asylums for the insane, owing to the danger of suicide

[1] There is increasing evidence that intramuscular injections of calomel have a decided influence to ameliorate the symptoms of tabes and dementia paralytica.—TRANSLATOR.

[2] Occasional interruption of the iodides is advisable when prolonged administration is indicated.—TRANSLATOR.

and the almost constant refusal of food, which is very obstinate. The same is necessary in cases of classic paralysis with grand delusions, with or without maniacal excitement, on account of the danger to self and others, and the financial interests of the family, and also because of the possibility of a sudden outbreak of furious mania.

The simple paralytic is also dangerous to others and himself, on account of disturbance of consciousness and dementia. If the means permit care and watching in private, then the patient's family may be spared the sorrow of commitment to an institution.

During remission of the malady and its final stage such patients as have a home and devoted relations are much more suitable for family care.

Concerning remedies directed against the disease-process during the stage of its activity, very little of a satisfactory nature is to be said.

Since in rare cases, following phlegmons, severe suppuration, and facial erysipelas, recovery from paralysis has been observed, attempts have been made by inducing suppuration artificially and the application of powerful irritants to the shaved head (moxa, hair-ropes, fontanelles, unguentum Authenriethi), to imitate Nature, but without success. Treatment should be limited to the internal administration of preparations of iodine—in case of necessity, combined with ergot. In cases of simple exhaustion-paralysis, tonics—especially syrup of hypophosphites (Fellows)—are of some use.

If in this stage of the disease the *indicatio morbi* does not suffice, still there are many symptomatic indications which demand medical activity. For the most part, these consist of sleeplessness and states of excitement. Sleeplessness is to be combated by prolonged baths, trional, paraldehyde, and amylene hydrate. At times chloral hydrate, with or without morphine, or an injection of duboisine sulphate (0.001 gram) may be tried. There are numerous cases in which the insomnia is temporarily refractory to all these remedies in heroic doses.

The states of excitement are partly delirious, partly angry outbreaks of fury, partly states of psychomotor excitement accompanied by violent congestion, which may reach the intensity of furious excitement. Trional or sulphonal in broken doses is useful to overcome delirious states. The wave of the affect is smoothed by morphine (0.01 to 0.025 gram) subcutaneously administered.

In states of congestive excitement injections of morphine are also useful, probably because of its stimulating effect upon the vessels and its influence to overcome vaso-paralytic hyperemia. Where

congestion is violent, preparations of ergotine (Wernich, Bonjean, Bombelon) have often a remarkable and prompt effect. It is best given as an injection (0.3 to 1 gram) diluted in sterilized water. Prolonged lukewarm baths with the ice-cap and preparations of digitalis may have a supporting influence.

In case of violent fury with destructive tendencies, hyoscine hydrochlorate or duboisine sulphate in doses of 0.001 gram subcutaneously, and 0.002 gram by mouth as a maximum dose, may be tried. They are also very suitable to bring about momentary psychomotor rest and thus to facilitate the transportation of the patient to an asylum.

Important episodic phases are the paralytic and epileptiform seizures. If the paralytic attacks be accompanied by violent congestion, one or two leeches behind the opposite ear and the ice-cap are indicated.

In order to excite the circulation and metabolism in the brain and to overcome the regional exudation or transudation (edema) which is probably the cause of the attack, decided diaphoresis and depletion through the skin (packing), and also calomel, 0.5 to 0.7 gram, which causes a decided diuresis, are useful.

In cases of epileptiform attacks, possible retention of urine or coprostasis as causes should be looked for and overcome. If the cause of the attack, which is often dangerous to life, is central, then the cortex must be rendered insensitive to the causal and continued irritation. This indication is most quickly and surely fulfilled by enemas of chloral hydrate (2.5 to 3.0 grams). While the patient continues in the seizure, liquid food should not be poured into the mouth, owing to the danger of choking and eventual pneumonia from entrance of food into the lungs.

In the final stages of the disease, owing to the filthiness of the patients, it is necessary to carry out the strictest cleanliness, to give attention to the retention of urine and its consequences, as well as to decubitus, and to keep the patient warmly covered. Food must be carefully given (only small mouthfuls of soft food) to prevent the patient's choking or the entrance of particles of food into the air-passages, with the induction of pneumonia or gangrene of the lungs.

CASE 72.—Acute paralysis.

H., pensioned officer, aged 41, was admitted to the asylum March 14, 1878. He had passed through the campaigns of 1859 and 1866, and during the first suffered with severe intermittent fever, and in the last had had a fall from his horse. In 1864 luetic infection, with several subsequent secondary conditions which finally yielded to energetic mercurial treatment. The patient

was not remarkable mentally; was self-willed and irritable. Until a few years before he had committed great excesses in venery. There was said to have been no insanity in his family. For two months he had been self-assertive and impossible, spoke often foolishly about politics, and went out in society.

A few days before his admission H. became congested, sleepless, restless, excited, and made visits in houses and business places where he made remarkable and unseemly speeches. He forced his way into the apartment of a prima donna of the opera, and his conduct was impolite. He made her a declaration of love and wished to be married immediately.

On admission he was in mania, having the greatest feeling of well-being, and immeasurable delusions of grandeur (he is the finest singer, the most intimate friend of the emperor, gives everyone around him a half-million in order to banish poverty; he awaits his bride, the prima donna, etc.). Stormy effort to escape, which is overcome by slight attention. The patient is congested, sleepless, and at times has spasmodic hesitating speech.

March 21st, the patient becomes quiet, remains in bed, but his consciousness is much interfered with. He laughs constantly and plays shamelessly with his genitals. In the beginning of May renewed and continued excitement, which becomes more and more truly impulsive, objectless activity. He jumps, drapes himself fantastically in his room, tears everything that falls in his hands, and forces everything into his mouth. Continued profound disturbance of consciousness with great confusion. What the patient says are only senseless fragments of sentences and incomprehensible mixtures of words. Here and there are signs of remains of his grand delusions without emotional coloring. All efforts to quiet him are unsuccessful. The motor impulse increases to continued smearing and eating of dirt and feces. The patient becomes violent when an effort is made to prevent this. It frequently happened that he ate sand and feces and smeared his hair and face. Mechanical restraint prevented, in a measure, these impulses. From the few words he was able to speak, it was evident that the patient took the sand for expensive chocolate. Grave panaris in the middle of September. In the beginning of October, diarrheas difficult to check; rapid, increasing marasmus; decubitus. Death in collapse, October 19th.

Autopsy: Cranium symmetric, not thickened; sutures evident. Dura attached to the skull on its inner surface without changes. Pia and arachnoid over the frontal lobe and central convolutions, especially along the vessels, clouded. The pia is closely attached to the cortex and cannot be removed without bringing away portions of cerebral substance. The cortex is brownish, not showing the layers clearly, and somewhat thinned and anemic over the frontal lobes. The radiations of Gratiolet of the frontal and central convolutions decidedly reduced. Hydrops of the ventricles. Brain edematous, but of firm consistence. No trace of syphilis in the vegetative organs. Chronic gastro-intestinal catarrh.

Case 73.—Classic paralysis. Subacute course.

S., physician, aged 40, of healthy parents. Father's sister was insane. The patient had no severe diseases, was never infected with syphilis, but as a young man was a good liver and fast; since his marriage at the age of 34 had been of good morals. He lived in happy marriage and had three healthy children; was much overworked in his profession as a country physician. In

1869 he had gastric fever, and during his convalescence had to take up his work again, and complained often of fatigue and his desire for repose.

In the beginning of 1870 his manner and character became quite different. He was distracted, forgetful, negligent in his practice, and seemed emotional and irritable. Toward the end of February he became restless, unsteady, hesitating in speech and act, and traveled about without purpose; and he made purchases that were not in accord with his relations and needs. He wished to embellish his house and property and change everything. He himself dug up a vineyard because he wished to make a garden where it was, destroyed the vines, cut off the branches of his fruit-trees, and forgot in one hour what he had undertaken the hour before. He forgot his family and his profession, and had no idea of time and place. He lost insight into his perverted acts, and was threatening when his relatives called his attention to it and when he was asked to control his senseless activity. Of late the patient was almost sleepless, his speech slow, his walk uncertain, and his expression tired. On account of his restlessness and his increasing agitation, he was brought to the asylum toward the end of the month of May, 1870. He had to be brought by force. In his new surroundings he soon felt as if he were at home. His fatigued features, relaxed attitude, troubled intelligence, the unequal pupils, the marked tremor of the tongue, indicate a grave organic malady of the brain. The vegetative functions are not disturbed; temperature is normal; pulse slow, from 70 to 80.

The patient is in great psychic and motor excitement, talkative, and with flight of ideas. He is full of senseless projects, but forgets from hour to hour what he has undertaken. He wishes to go to Italy, the Orient, America, but with slight persuasion his journeys are postponed. In one breath he asks for wine, cigars, women, and at times makes angry attacks upon those around him when his desires and plans are not immediately complied with; but one project is chased away by another. The patient is sleepless and does not stay in bed. In the very first days after his admission he develops grand delusions. He invites a million persons on his oriental journey, writes hundreds of telegrams to potentates and learned men, orders leviathans for his ocean journey, calls a meeting of twenty-eight million Germans, and intends to build a city of a million. The patient has no idea of time and place, and consciousness is profoundly disturbed. At dinner he empties his salad in his soup. Increasing excitement, impulsive forced thought, and rapid speech. His grand delusions become more and more monstrous and impossible. The patient lives in his enthusiasm—his city of a million is already built; every inhabitant will have the superb head of Goethe. He convokes all the planets of the universe, makes the earth into a mine of diamonds. He pays for his gigantic projects with bank-notes that he makes with his rotary machine, and he has as many of them as he desires. He will soon be finished with the earth. He already has the north pole, and he is about to build a central sea with infinite rapidity. He has brought down the sun and made it a block of gold. He has brought it down because in the sun there is no aqua regia to dissolve it. He has brought down the planets and made new ones of gold, and has attached them at a thousand feet from the earth. He bursts the crust of the earth with nitroglycerin to the depth of one hundred feet and fills it with diamonds.

In June the state of excitement quickly subsides and leaves a state of profound mental weakness, in which there are only now and then silly delu-

sions of grandeur (he has a waistcoat bedecked with diamonds, sacks of diamonds in the cellar, his wife has a diamond corset, etc.). The patient has numerous errors of memory—he was here months before. A picture of Rome, a place where he had never been, awakes in him the supposed memory of that city in all possible details. The patient is not orientated in time. He takes dinner for supper, has no further interest in his physical needs, and does not ask about his profession and family. Awkwardness of movement; awkward, unsteady gait; unequal pupils, first one then the other the larger; drooping, relaxed, tremulous features; and increasing stumbling on syllables.

In November, without any observable cause, rapid psychic deterioration. The patient became confused, demented, and at times even stuporous. He is in a cloudy state, has to be made to eat, and becomes unclean. The speech at times becomes quite incomprehensible (aphasia, stumbling on syllables), walks with feet wide apart, gait uncertain, and the body inclines to the left side. Now and then traces of grand delusions (masses of gold, diamonds).

From December on apathetic dementia; loss of ideas of movements; purposeless, awkward picking at his clothing.

From January, 1871, on there is marasmus, rapid deterioration, the hair becomes gray, pulse extremely slow, temperature subnormal. The patient keeps his bed and is no longer able to stand on his feet. He must be fed, for he no longer perceives the food and has not the necessary ideas of movement.

In the middle of March, difficult respiration and dysphagia appear.

March 19th the patient died of pneumonia.

Autopsy: Hyperostosis of the skull, sutures obliterated in great part. External hydrocephalus; milky clouding and thickening of the soft membranes over the anterior and parietal lobes, with traces of the same condition at the base. The membranes cannot be removed from the cortex without bringing away portions of it, and are edematous. Frontal, parietal, and temporal convolutions atrophic, especially the central convolutions. Cortex yellowish, external layer swollen, markings retained. White substance anemic, edematous, and increased in consistency.

Ventricles dilated, the ependyma granular, hydrocephalus internus; gray degeneration of the posterior columns of the cord. With the exception of the apex, the left lung is in a state of gray hepatization. Hypostatic condition of the right lung. Heart fatty. Aorta very atheromatous.

CASE 74.—Hypochondriac form of paralysis. After a remission it takes on the classic form. After another profound remission, recurrence of the hypochondriac form.

S., aged 31, brewer, said to be without hereditary taint, always of eccentric, irritable character. In 1873 he went to London to perfect himself in his calling. There he gave himself up to drink and sexual excesses, and, against the expressed will of his parents, married. As a result of this his relations with his family were estranged. They gave him no support, and in this painful situation he gave himself up to extreme excesses in drink. About five months ago he became sleepless, excited, often had vertigo, headache, congestion, and is said to have had, at times, grand delusions. He became irritable, depressed, forgetful, and distracted. When two months ago he returned to his parents' house he was weak mentally, physically reduced, his

expression was changed, painfully depressed, and thought he was in poverty and incurable.

It was remarked on his return that his gait and speech were uncertain. A hypochondriac-melancholic disease-picture developed more and more clearly, and when the patient began to refuse food it was necessary to send him to the asylum, October 18, 1875.

On admission the patient was profoundly disturbed, dumb, anxious, with increased, superficial respiration, very slow pulse, widespread intercostal neuralgia, tremor of the tongue, shuffling, slightly staggering gait, salivation, and retention of urine. After a few days the patient began to speak; speech was not disturbed, except that it was noticeably nasal. There was gastric and nasal catarrh, with great secretion of mucus. Constipation, great anemia, and decided loss of weight. The patient had to be forcibly fed. The reasons for the refusal of food were numerous hypochondriac feelings and delusions.

There is a feeling of pressure in his abdomen reaching up to the breast; his throat is stopped up; his abdomen is constantly vibrating. The urine does not get any better. He suffers with stoppage of water; the whole body is out of order. Digestion is gone, his body is full, and food is being forced into him and does not leave him. He asks whether it will not be necessary to cut open his abdomen. It would be better to give him prussic acid. All the force of his body is gone. He is infected with vermin, and people always said he had a chancre.

Pus comes out of his throat; he is full of pus; his brain is soaked in urine. Along with the emotion accompanying these ideas there was still great mental weakness. Simple threats were sufficient to induce the patient to take food. Frequently there was inability to pass urine.

The end of February, 1876, the hypochondriac delirium disappeared with improvement in the gastric catarrh, and there was a decided remission; but the continuance of the mental weakness, the motor disturbances, and the salivation indicated the gravity of the disease. The middle of April there was hesitating speech and twitching of the facial muscles in expression and articulation.

April 18th the patient was found in a state of profound disturbance of consciousness, with signs of violent congestion. In this stupid state he remained until the 26th, when a state of maniacal excitement came on. The patient was restless, slept little, talked confusedly, expressed desultory delusions of grandeur, had the impulse to collect everything, great disturbance of consciousness, marked stumbling on syllables, staggering gait, and frequently vascular paralysis in the face. With violent congestion in May, there was temporarily furious mania, with tearing, destructiveness, smearing, and then the excitement subsided to the level of maniacal exaltation with grand delusions. The patient talked about a rich bride, a magnificent marriage, gigantic breweries which he would build. The middle of August, in the midst of this picture of classic paralysis, there was a second marked remission. The patient recognized his condition and gave as the causes of his disease those already mentioned. He corresponded with his relatives and presented no particular symptoms aside from mental weakness, disturbance of speech, and frequent vascular paralysis in the face.

Thus he continued until the beginning of January, 1877, when there was a remarkable recurrence of the hypochondriac-melancholic picture, accom-

panied by recrudescence of the gastric and pharyngeal catarrh. This continued until the end in profound dementia. The delusions were on this occasion still more monstrous and demented than at first. The patient stated that he had no stomach; that he was absolutely stopped up; that his breathing and pulse were arrested; that throat and intestines were obstructed, and that his bowels had never moved; that his body was filled with pus, etc. Now and then micromaniacal ideas were expressed; as, for example, that he was a little boy of 16, etc. At first the patient would not eat and had painful emotional reaction to his feelings and delusions. With rapid progress of the dementia he became, in spite of his hypochondriac complaints, gluttonous and without emotional feeling.

The motor and vasomotor disturbances constantly increased. The speech became almost incomprehensible at times, owing to great stumbling on syllables and labial ataxia, the gait unsteady and staggering, the movements of the hands awkward. The left pupil became dilated. There was often retention of urine. Attacks of vertigo, aphasic symptoms, and attacks of congestion were observed. The pulse became extremely slow, the extremities cool and slightly cyanotic. The feet became edematous if he stood on them for any length of time.

In the course of the year 1879 there was decided loss in general nutrition. In the beginning of September there was profuse diarrhea with fever, which soon proved to be uncontrollable. The patient refused food, and along with the remains of his hypochondriac-nihilistic delirium (no teeth, no abdomen), during his last days he had inanition-deliria, and died in profound marasmus September 17, 1879.

Autopsy: Skull and dura normal. Decided increase of serum in the arachnoid space. Pia over frontal and parietal lobes diffusely white and thickened, edematous, easily separated from the cortex. The convolutions of the forebrain decidedly narrowed and below the general level. Ventricles decidedly dilated. Ependyma markedly granular. Cortex much thinned, without markings of layers, and of yellowish-gray color. The brain anemic, edematous, and of firm consistence. Vessels and nerves at the base without alterations.

CASE 75.—Primary progressive dementia paralytica following mental overwork.

S., aged 40, married, was admitted to the asylum November 8, 1877. His father died of apoplexy. A sister of his mother was insane. A brother of the patient's died of suicide in an attack of insanity.

The patient was a nervous, irritable man, afflicted with frequent headaches, not very bright, but very industrious, with a strong sense of duty and given to no excesses.

Three years ago, during eleven months, he was very much overworked. Following this there were occasional headaches and attacks of congestion and dizziness. He, who formerly had written with great ease, could now perform the slightest work only with great difficulty. Work exhausted him mentally; he became confused and his style became heavy. In spite of a sojourn in the country and the greatest care, the mental deficiency made rapid progress. In his work he tried to find the correct expression, but never could. On May 22, 1877, after the midday meal, he had an apoplectic attack, remained several

hours unconscious with congestive symptoms, was temporarily confused and excited, but quickly recovered without signs of paralysis; but since this he had shown decided loss of memory and become absolutely incapable of work.

After staying three months at a cold-water cure, disturbance of speech came on, and mental weakness was still more marked. Toward the end of October the patient felt his left ringfinger to be ice-cold, and this feeling spread over the whole forearm. Motility was not disturbed, but sensibility was greatly reduced. This trouble (vascular spasm?) occurred in attacks several times, lasting as long as a quarter of an hour.

On the 2d of June there was a congestive state of excitement, in which his consciousness was profoundly disturbed. He became delirious, raved, but after a few hours came to himself again and was quiet.

On the 7th there was another attack of excitement, which caused him to be brought to the asylum. The patient did not recognize his situation. He thought that his nerves were destroyed, and he was in danger of going insane. His memory was very defective, his consciousness clouded; glance and expression indicated advanced dementia; his speech was heavy, and often he could not find the right word, and was painfully impressed by this. Articulation was much disturbed—some syllables were swallowed, others were unusually accented, as if spasmodically pronounced. With the articulatory movements there was lively twitching of the facial muscles. Myosis in both eyes. The finer movements of the hands were uncertain; the handwriting grotesque, unequal; the gait stiff, wooden, and slightly staggering when he turned around. No disturbances of sensibility. Pulse very slow. The ophthalmoscope showed no changes in the fundus except venous stasis. The vegetative organs were without findings, except for hemorrhoids and constipation.

The dementia and disturbance of consciousness constantly progressed. The patient is dreamy, thinks at one time he is at home, at another at the sanitarium. His memory is extremely defective. Late impressions are no longer retained. Old and new impressions are mixed together without order. Communication of thought is made difficult by aphasic and paraphasic symptoms. The patient tries all day long without success to write, and is thus exhausted and fatigued. Now and then, in this state of cloudy consciousness, there are fragmentary delusions of grandeur without further elaboration (he becomes a general, is decorated, must go to the emperor), and also those of persecution (he has committed adultery, and must appear before a court-martial, etc.). The disturbance of speech is variable—in general, however, progressive. His attitude is more and more relaxed, his gait more spastic and uncertain. Now and then there are attacks of vertigo and congestion with decided vascular paralysis, fluxion, incapability of speech, and psychic excitement manifested in wandering about and futile efforts to escape. In May, 1878, nine epileptiform attacks. In August an apoplectiform seizure, after which the dementia and disturbance of speech were decidedly increased and remained so.

In the course of the winter of 1878-79 there were now and then, with considerable congestion, attacks of joyful excitement lasting as long as ten days, limited to optimistic ideas, impulsive thought, and motor unrest.

In February and March, 1879, there were repeated epileptiform seizures.

On May 20th, after the patient had gone about all day as if lost, at 7 o'clock in the evening there were frequent epileptiform seizures. At 11 o'clock

in evening the whole left side of the body was paralyzed, while on the right side the spasm continued. The patient lay in sopor, with stertorous breathing, but the temperature did not rise above 38° C. At 6 o'clock in the morning on the 21st, death.

Autopsy: Hyperostosis of the cranium. Dura normal. The soft membranes clouded and thickened along the large vessels over the convexity. The vessels of the pia very tortuous, and in places much injected. The sinuses at the base overfilled with blood. The pia hyperemic, edematous; over the second and third left frontal convolutions it can be removed only by bringing away portions of the cortex. The convolutions are of coarse morphology. In the frontal and parietal lobes they are narrowed, and in certain places below the general level. The cortex is reddish gray. In the gray as well as in the white substance the lumina of the vessels are very prominent. The cut surface everywhere has a watery, shiny appearance, especially pronounced in the right hemisphere.

CHAPTER III.

Cerebral Syphilis.

THE fact that syphilitic anemia (as a result of syphilitic disease of the blood-forming organs, chlorosis) is capable of inducing psychoneuroses which differ in no way from those due to other causes has already been referred to in the discussion of etiology (page 181) Besides such cases, however, syphilis, as a result of tissue-changes in the brain and its membranes, may lead to brain affections, which, owing to their diffuse character, cause mental symptoms to predominate in the disease-picture, and thus they fall in the domain of psychiatry.

The occurrence of such luetic cerebral affections is favored when the brain is weakened by predisposition, overwork, or excesses of any kind. In such cases the localization of the affection in the brain may take place very early after the primary infection. In other cases this occurs in syphilitics, or in those that have been syphilitic, only after many years, indeed, even after decades, as a result of some exciting cause—for example, trauma capitis. In the first instance the luetic localization is frequently accompanied by syphilitic disease of other organs; in the second, it is usually an independent disease.

The cerebral changes lying at the foundation of cerebral syphilis are extremely numerous in localization and character. Along with simple sclerotic, suppurating, hyperemic, gummatous periostitis, gummatous osteomyelitis, and Virchow's inflammatory atrophy (caries sicca) in the cranial bones, there are simple inflammatory and specific processes affecting the meninges, the substance of the brain, and the cerebral arteries.

The changes observed in the dura are pachymeningitis externa, partly interna, partly gummatous meningitis, which is most frequent between the

folds of this membrane and terminates in caseous tumors. Specific processes (syphiloma) are more frequent in the subarachnoid space, which Heubner recognized as reddish white or grayish red, or gray moist masses of gelatinous consistence. These are circumscribed masses, never distinctly limited from the cerebral substance, which is in a state of white or red softening, and these masses end probably in caseous degeneration (yellow masses). Over the convexity they attach the membranes together and to the cerebral surface (softening). At the base of the brain the membranes are frequently untouched by the process, which appears to be rather a gray, gelatinous infiltration, the appearance and extent of which cause it to resemble tuberculous meningitis.

If absorption of the syphilitic masses occurs, then the membranes present a scar. Syphilitic independent tumors in the brain are infrequent. They occur only in connection with those of the membranes, as a rule. Diffuse encephalitic processes are more frequent (Virchow, Schüle). The circulation and nutrition of the brain suffer further important injury as a result of the endarteritis and frequent disease of the arteries of the base described by Heubner, as a result of which they become blocked (especially the Sylvian artery and that of the corpus callosum). Since these are end-arteries, the areas supplied by them (especially the lenticular nucleus and caudate nucleus) easily undergo softening. There may be also changes in the cranial nerves at the base due to simple inflammatory or specific processes (retracting exudates, syphiloma).

Owing to the variation of the anatomic processes and their localization, we can understand the variations in the clinical picture of cerebral syphilis, in which diffuse, as well as focal symptoms, may occur without order or grouping. Very rarely the disease-picture develops acutely and stormily. Almost always symptoms of a slowly developing cerebral disease precede it during months or years, partly in the form of attacks or as focal symptoms, partly continuous and indicating diffuse cerebral changes. At first these are of a very indistinct kind. With attacks of headache, which is usually increased by pressure and while in bed, occasional attacks of vertigo and fainting, aphasic symptoms, paralytic weakness of the extremities, and occasional paralysis of a cranial nerve, there is a change of character and mental habit. The patients often become morose, remarkably irritable, depressed, and often hypochondriac. Memory and speech suffer. Their mental powers decrease; they tire quickly in mental work, and their feelings become dull. Facial expression is also duller, more fatuous, and the attitude is relaxed. The patients bear alcohol badly, at times have actual attacks of lethargy, to be followed by weeks of troublesome sleeplessness. After longer or shorter duration of these prodromes, there may be an attack of furious mania, hallucinatory delirium with frightful anxiety and fearful content of hallucinations; or an apoplectiform or epileptiform attack may mark the outbreak of the real disease. After complete or partial subsidence of

the symptoms of the seizure, the picture of progressive dementia develops, or that of dementia paralytica. Only in rare cases does this arise primarily out of the prodromal symptoms.

In the course of this progressive dementia there may be intercurrent conditions of great variety—primordial delusions of persecution and of grandeur, hallucinatory delirium, profound somnolence and dreamy states of consciousness, violent mania, reaching the degree of acute delirium.

The fundamental psychic weakness, the marked disturbance of consciousness, the sudden occurrence and subsidence of the symptom-complex, lend to this disease peculiar features and point directly to an idiopathic cerebral disease. Erlenmeyer emphasizes the partiality of the psychic defect in cerebral syphilis; for example, the complete loss of ability to reckon, or of a foreign language formerly spoken fluently (as if the patients had never possessed this faculty).[1] Motor disturbances are never wanting in this psychic disease-picture. They are extremely numerous, change suddenly, and are in part focal and episodic and in part due to diffuse changes that are continuous and progressive.

Of the motor disturbances, especially important are paralyses of the cranial nerves, among them the motor oculi (ptosis), abducens, trochlearis, hypoglossus, facialis, in this order of frequency. Hemiplegias are infrequent. Then follow monoplegias of the extremities; paraplegias are the least frequent.

The diffuse disturbances of the motor centers are general disturbances of co-ordination which frequently affect speech and thus cause the disease-picture to resemble dementia paralytica very closely. Almost always, in cases of chronic course, speech is implicated. With attacks of occasional aphasia and absence of speech there may be stumbling on syllables, scanning or, at least, bradyphasic speech.

In all phases of the disease-picture, running its course as progressive dementia with motor disturbances, there may occur apoplectiform and epileptiform seizures. The former are rarely accompanied by loss of consciousness and infrequently leave behind paralyses (hemiplegias, aphasia, etc.), which, however, are usually incomplete and soon pass away. The epileptiform seizures consist of partial tonic or clonic or general convulsions. They often occur in a series. Consciousness is not always lost. A frequent condition, emphasized justly by Heubner, is disturbance of consciousness after psychic or motor seizures, characterized by somnolence that may reach the degree of coma, or confusion, and out of which the patient can be momentarily awak-

[1] Schüle also finds this syphilitic dementia peculiar in that it develops quickly, that with a general mental weakness it shows remarkable partiality in psychic defect, and that these partial symptoms of defect are extremely variable.

ened, coming to himself temporarily, as a healthy person comes to himself out of a drunken sleep. The duration of this condition may be days or several weeks. It may also occur as an independent episodic disturbance. The probable causes of these conditions are disturbances of circulation in the cerebral cortex due to emboli or thromboses. Amblyopia, that may reach the degree of amaurosis, is not infrequent, occurring episodically, and it may be accompanied with negative findings; or, if it be lasting, with signs of inflammation and atrophy of the optic nerve.

Sensory disturbances play an unimportant part in the disease-picture (pains in the bones, neuralgias and anesthesias in the domain of the trigeminus, rheumatoid pains in the extremities).

The course of cerebral syphilis on the whole is progressive, often by steps, since any new attack may give the malady a new impetus; but in its general course, essentially progressive, there is an irregular variation of symptoms and isolated conditions like those observed in hysteria (Wunderlich). Slight and grave, focal and diffuse symptoms, occur in striking and unusual combination, follow one another, and make a prognosis for the immediate and distant future almost impossible. Death may occur unexpectedly as a result of a new attack, or the patient may recover from the most grave condition. The general duration of cerebral syphilis is months or many years. Death occurs suddenly in a seizure, or with comatose symptoms, or in slow deterioration and general marasmus.

Spontaneous recoveries have not been observed, though by early energetic treatment half of the cases can be saved, and not infrequently recovery can be obtained. Recovery, however, is usually with defect, at least mentally. "Lues impresses upon the brain an indelible stamp" (Wunderlich); it remains less capable of resistance, and relapses must be expected.

The first condition for therapeutic measures is recognition of the specific nature of the cerebral disease. Unfortunately there is no specific symptom. The diagnosis must always be one of probability. The first task is anamnestic and present proof of syphilis; but, even when this cannot be shown, it does not in itself demonstrate that the cerebral malady is not of syphilitic nature. Important in the diagnosis is the frequent absence of insufficient cause of the disease other than syphilis, the unusual grouping of the symptoms, and the protean changes in them. With reference to the first point, the occurrence of grave cerebral symptoms, often in young persons, in the absence of all predisposition, exciting causes, or causal disease, is striking. Such a patient, for example, falls down in an apoplectic seizure, and is without atheroma, without heart disease, without Bright's disease, etc. Another has an epileptic attack without any apparent cause.

With respect to the grouping of the symptoms, the mixture of focal and diffuse symptoms, and the simultaneous occurrence of functional disturbances in disparate and widely separated nervous paths, are remarkable. Thus, for example, there may be hemiplegia complicated by paralysis of the motor oculi and abducens; left-sided hemiplegia with aphasia; epilepsy with osteocopic pains; apoplectic seizures followed by states of somnolence.

As emphasized by Heubner, weight should be given to the temporary character of the signs of loss, with the irregular alternation of slight and severe psychic, motor, sensory, and sensorial symptom-complexes.

In this condition treatment has a fertile field when it is instituted early and energetically: *i.e.*, specific treatment. The more probable the diagnosis and more threatening the symptoms, the more energetic must the treatment be. When the diagnosis is doubtful, iodide of potassium should at least be tried.

In the first case an inunction cure should be begun, with care, however, not to restrict the patient's diet. The brain of the syphilitic does not bear weakening treatment, and least of all venesection. Where nutrition is good, even forced inunction treatment is not dangerous. It may be combined with iodide of potassium or alternated with this, or the iodide may be used as an after-treatment. If inunctions are impossible, then injections of sublimate may be employed. In chronic cases presenting more the picture of dementia paralytica, iodide of potassium is suitable. A daily dose of from 8 to 10 grams may be administered, if, following Erlenmeyer's instructions, it is administered in repeated small doses diluted as much as possible, and at the same time accompanied by the administration of a strong infusion of calamus aromaticus.

During convalescence a fortifying treatment is necessary—meat and milk diet, sojourn in the country, sea-bathing, cold-water cures, and the continued use of iodide of iron. Sulphur baths are not indispensable. Since the possibility of a recurrence of the malady hangs over these luetic patients with an invalid brain, mental and physical and cerebral dietetics are absolutely necessary.

CASE 76.—Cerebral lues resembling the disease-picture of dementia paralytica. Improvement under specific treatment. Exacerbation ending in death.

S., aged 40, saddler, without hereditary predisposition. Had a hard chancre at the age of 24. He seems to have had no specific treatment. It could not be determined whether there were secondary symptoms. Since 1870 the patient had suffered with frequent attacks of dizziness and often complained of dimness of vision. Seven months ago he was married. Soon after his character changed. He became irritable, at times apathetic, distracted, and had difficulty in work. Often he could not find the right word. About Easter, 1873, he is said to have been delirious several days.

August 2, 1873, there was a maniacal state of excitement, followed on the 4th by an apoplectiform attack which passed off without leaving paralysis. On the 5th, violent vomiting. Vomiting had occurred 120 times from the 6th to the 15th, until the patient was so exhausted he was not able to rise from the bed without fainting. On account of continued maniacal excitement (he

wished to build houses, go to America, etc.) he was admitted to the asylum August 15, 1873.

The patient was greatly exhausted, reduced, extremely pale, without fever. Vomiting lasted still some days. Consciousness was much disturbed, feeling much elevated, thought increased in rapidity, yet the patient evidently had trouble to express himself. Consciousness was filled with grand delusions, as fantastic, causeless, and illogical as in paralysis. The patient wished to visit all the menageries in the world, buy wild boars, elephants, and make enormous transactions on the stock exchange. The movements of the hands were ataxic, uncertain; walking with feet wide apart, awkward. The right pupil myotic, double ptosis. The right superior and internal recti were paretic, and there was double vision looking inward and upward.

Over the whole body there was complete analgesia with retention of tactile sensibility, correct localization, and reflex excitability. The inguinal and cervical glands were somewhat swollen—a shining scar. On the soft palate a white cicatrix, and other white spots the size of a bean deviod of epithelium and surrounded by a hyperemic ring. The patient had lost his hair during the last few years.

A diagnosis of cerebral syphilis was made, and in spite of the marked marasmus, inunctions of mercury, 4 grams daily, with 4 grams of potassium iodide, were prescribed. At the same time the patient was fed as well as possible and kept in bed. The delirium became more and more incoherent, and the patient was unable to distinguish his fancy from actuality. The development of thought was difficult, and he had much trouble often in finding the desired word. Most recent events were immediately forgotten. The patient had delusions about a negro whom he thought had cut off his head with a fine cord, and asked for thread in order to sew it on again. He looked for iron plates decorated with the crown of a count in diamonds which Bismarck had presented to him; and he believed himself a count.

September 13th the inunction cure was discontinued, but potassium iodide (4 grams) was continued.

In the course of October the signs of syphilis in the mouth disappeared completely, nutrition improved, and the baldness began to give place to growth of hair. The psychic symptoms did not improve; on the contrary, mental weakness increased and the delirium took on alternately megalomaniac and micromaniac features. The patient thought two millions had been given to him, took himself for a prince, lord, adjutant of all royal personages, traveled in very fast ships driven by bellows. He was a great sorcerer, visited the north pole by going under the earth, entering at the crater of Vesuvius. In his periods of depression he had consumption and prepared for death. At times brutal attempts to escape, violence toward those around him; tried to choke them, and destroyed windows. On two occasions, in a childish state of depression for being restrained, he made two attempts at suicide by strangulation.

From the 1st to the 20th of November, treatment with inunction (4 grams), with continuance of the iodide of potassium. The patient gains in weight and his cheeks grow ruddy. November 21st, potassium iodide discontinued. Occasional untidiness is shown to be due to anesthesia of the rectum and urethra. Now and then he complains of rheumatic pains in the lower extremities. From December 21st the patient is again given 2 grams of iodide

of potassium until April 5, 1874. Thereafter, daily, 4 grams of the syrup of the iodide of iron.

In the course of March, 1874, the patient becomes quiet, well ordered, his consciousness clears, and he has insight into his disease, being unable to understand how he could have had such senseless ideas. His memory for the events of the disease is only summary. Exact examination shows moderate and permanent dementia. The patient has not a clear insight as to the severity of his disease, and he is very optimistic about his present relative capabilities; his relations and feelings for wife and relatives are dulled, and with that there is a certain emotional irritability. Ptosis and paralysis in the right eye remain unchanged.

In the further course there is no disturbance of speech, sensibility, or motility, and no signs of syphilis. On May 3, 1874, the patient resumes his occupation and proves to be capable of work.

August 10, 1874, the patient was again admitted. After decided sexual and alcoholic excesses toward the end of July, he had another attack of mental excitement with vertigo and violent vomiting, just like the first.

The patient presented the same mental picture as on his first admission: *i.e.*, great mental weakness and confusion, absence of critical power, enormous and grand delusions; but, in contrast with his previous condition, his state of nutrition was excellent.

The former motor disturbances of the right eye existed unchanged. Resumption of inunctions and treatment with iodide of potassium this time had no effect. The patient presented a peculiar change of expression similar to one intoxicated. The muscles of the lips and cheeks on the left side were often paretic. From October on there was progressive amblyopia in both eyes, which caused the patient to wish to go to England "to have new eyes put in." In March, 1875, there was slight stumbling on syllables and swallowing of syllables, which continued thereafter with varying intensity. In the beginning of April, ataxia and trembling in the upper extremities came on. On May 11, 1875, two attacks of vertigo. In the course of the summer there developed extreme (syphilitic) chlorosis, and in November there was temporary retention of urine and attacks of vomiting. In December speech became interrupted, slow, and absolutely wanting in states of excitement. Syllables were incorrectly accented and often explosively uttered. Now there were frequent signs of vascular paralysis in the domain of the cervical sympathetic. Ptosis came on in the left eyelid. In this long period there was progressive dementia and absolutely incoherent delusions of grandeur. The patient said he was holy, had discovered an entirely new portion of the world through the firmament. He was the most skillful cook, and at the same time a prince. Now and then refusal of food because the millions of gods had forbidden him to eat or Bismarck had poisoned his food. In the course of the year 1876 the malady had progressed decidedly.

The increasing anemia and difficulty of movement made it necessary to keep him in bed. The disturbance of speech increased so that at times the patient was unable to make himself understood on account of stumbling on syllables and stuttering. With this there was amnesic aphasia. There was profound dementia, with remains of grand delusions. He stated that he had seven lives, seven genitals, and was seventy-seven million years old. The gods would carry him away in seven days, and then he would disappear. From

May on there were at times attacks of vomiting and retention of urine, meteorism, and symptoms of collapse.

From January 8, 1877, there were frequent apoplectiform and epileptiform seizures. The temperature rose to from 39° to 40° C. On the 16th death occurred.

Autopsy (twenty hours after death): Cranium and dura normal. Over the convexity the soft membranes are extremely delicate, with the exception of slight cloudiness along the large vessels over the parietal lobes, and yellowish-white thickenings of the pia, the size of millet-seeds, over the temporal lobes. At the base, however, the membranes are much clouded and thickened, especially on the right side. The right motor oculi is scarcely half the size of the left, and can be removed from the thickened arachnoid only with great care. The other cranial nerves at the base are uninjured. The right vertebral artery and the Sylvian artery, as well as the commencement of the basilar, are thickened, rigid, sclerotic, but not obstructed. Nevertheless over the convexity, as well as at the base, even where the pia is neither clouded nor thickened, there are spots where it cannot be removed from the cortex without bringing softened cerebral substance with it. This is most marked at the tip of the frontal lobes.

The convolutions of the frontal lobes are very narrow, and in places below the general level. The cortex is much thinned, yellowish-gray, softened, and infiltrated with serum. The brain is, in general, very anemic, has a moist shiny appearance, and retracts on section. The vessels are dilated, and the lumina of the vessels become prominent. The ventricles are decidedly dilated and filled with clear serum. A few granulations. All the inner and external parts of the body are very poor in blood.

On the left under surface of the epiglottis the mucous membrane is pigmented and presents superficial loss of substance. In the pharynx, chronic catarrh. The apex of the left lung is retracted by scars, and pigmented. The lower lobe of the left lung is in a state of gray hepatization. The edges of the bicuspid valves are shrunken and thickened. The internal surface of the aorta is smooth and unaltered.

Liver fatty. Portal vein intact, though on the anterior surface of the right lobe of the liver the serous membrane is thickened, and beneath it, extending into the parenchyma, there is a hard, white, fibrous callosity. No other traces of visceral lues.

CASE 77.—Progressive dementia with motor disturbances, of luetic origin. Treatment with potassium iodide. Lasting improvement.

W., official, aged 35, married, was admitted to the asylum May 27, 1876, with the diagnosis of dementia paralytica. The patient was of a neuropathic, eccentric family. The father was generally considered insane. At the age of 22 the patient had a hard chancre, and afterward general luetic symptoms. The treatment seems to have been specific, but not very energetic. One year after infection there was an apoplectic attack, which left behind facial paralysis. It is said that no traces of syphilis were to be observed. Thereafter, however, the patient was frequently troubled with headache and intolerance of alcohol, and fatigued quickly in mental work. In 1873, at the Vienna Exposition, he is said to have committed excesses in *potu et venere*

and thereafter was nervously excited, and for a long time sleepless; and he is said to have recovered after treatment in a hydropathic sanitarium. Three years ago there was right-sided facial paralysis. The patient is said at that time to have had drawling speech for a time.

In the summer of 1875, at a time when the patient was under great mental strain, sleeplessness and loss of weight came on. In March, 1876, the patient became mentally changed, peculiar, irritable, distracted, forgetful. At times he was anxious and worried about the future, feared that his family would be forced to suffer privations; then he would become gay and careless to the degree of joyousness. In May, 1876, there was again troublesome sleeplessness. The patient became excited, incapable of work, and sensitive to light and noise.

On admission the patient seems slightly congested, as if drunk, with relaxed, slightly demented facial expression and apathetic manner. He does not recognize the place where he is, thinks the following day that he has been here several weeks, forgets in the next moment visits, meals, while his memory for past events is quite correct. He himself notices that he is forgetful, that for a long time he has been unable to carry on his business properly, and that he has made mistakes in counting money, in accounts, etc. The patient cannot repeat long sentences that are recited to him. His speech is disturbed, slow, and slightly hesitating. His tongue trembles, and in the movements of the face in speaking and otherwise the lips tremble, and there are fibrillary twitchings in the facial muscles. The right side of the face, especially about the mouth, is paretic; there is slight left ptosis and paresis of the inferior rectus. The pupils are moderately dilated and equal, reacting promptly. The movements of the extremities are somewhat uncertain, and there are often slight twitches in them. The gait is slightly staggering, uncertain, and the feet wide apart. Most careful examination reveals no traces of lues. The ophthalmoscope shows the left arteries narrow; some venous stasis. On the right side the external half of the disc is gray and blurred (edema). The patient is hyperesthetic to noises, sleeps little. He wanders about dreamily, without distinct consciousness of time and place, tries often to run away, and repeatedly weeps childishly because his wife does not visit him, and because here in prison he must pass his time in catching flies. On one occasion, for hours, he was bewailing his fate because he was ruined here and treated with poisons. He was a lost man, asked for his coffin, and to be laid in it. "Oh, how bitter it is to die and not to be able to see my wife once more."

The patient is given baths, which overcome the sleeplessness. Owing to the luetic history, potassium iodide is prescribed and gradually increased to 6 grams daily, until acne and symptoms of slight intoxication occur. By the middle of June consciousness cleared, and the motor disturbances were reduced to a minimum.

Further observation of this interesting case was prevented by his sudden removal from the asylum, July 4, 1876. When discharged the patient presented a slight degree of psychic weakness, imperfect speech, and slight twitching of the facial muscles.

To the kindness of Director Birnbacher, of the asylum, I owe these further notes about the patient: Soon after his discharge from the institution he had an apoplectiform attack, followed by decided loss of mental functions and

unilateral paresis. "The man was like a demented, silly child." After six months he recovered so far that he could at first copy, and soon after do light original work. During the last two years the patient has been more or less occupied as a lawyer. "With the exception of slight dementia he might be described as mentally intact."

CHAPTER IV.

Senile Dementia.

In advanced age the brain undergoes a retrograde metamorphosis which is only one of the manifestations of a general physical involutional process.

While vegetatively this is senile marasmus, the organic cerebral change results in change of mental disposition and character. The man whose brain is aging becomes more circumspect in his opinions and judgments. His power of intellectual assimilation is lessened; his imagination is not so lively and warm as in youth; thought becomes slowed, memory imperfect, the circle of ideas becomes more limited, and the will, no longer strong, is more easily influenced.

The aged man lives principally in the past; he is conservative, mistrustful of what is new, and an egotist and *laudator temporis acti* (Legrand du Saulle).

Frequently this change does not stop with the senile alteration of character described, but advances to a state of mental weakness, which may reach the most extreme degree of dementia.

The clinical picture of senile dementia corresponds anatomically with an atrophy of the cerebral hemispheres and simultaneous atheroma of the cerebral vessels. The atrophy is always most distinct in the convolutions of the forebrain, the cortical layers of which are largely obliterated, and present a yellowish color on section.

Microscopically there are found changes in the nerve-cells of the cortex (simple atrophy, fatty degeneration, fatty pigmentary degeneration) and in the vessels (atheroma, obliteration due to atrophy, capillary aneurisms). With the cerebral atrophy there are observed compensatory thickenings of the cranium, accumulation of serum in the subarachnoid space and the ventricles, pachymeningitis externa and interna, and edema of the pia; often, too, partly causal, partly as complicating conditions, focal changes, in the form of apoplectiform scars and spots of softening (atheromatous encephalitis).

This atrophy may be primary, or it may be due to focal processes, especially when they are multiple.

The initial symptoms of the disease-picture are those of the senile change of character, which increase, and cause to become especially prominent, egotism, pride, distrust, irritability, and lapses of judgment and memory, especially for recent events. Not infre-

quently, with this there are vertiginous, apoplectic, or epileptoid attacks, and somnolence or sleeplessness, with nightly wandering about. In other cases a remarkable lowering of ethic feeling manifests itself, and in connection with sexual excitement there may then be gross inclinations, to which children especially fall victims. After a shorter or longer time of this prodromal stage the picture of senile persecutory insanity or of senile mania (*vide* page 153) may develop and lead to dementia; or the dementia is primary and progressive, developing immediately out of the prodromal stage. Then there is rapid development of profound loss of memory, which affects especially recent events, and sometimes even the events of the last ten years are quite obliterated from the mind, so that the patient lives in time long passed. A profound disturbance of consciousness affecting time and place also appears. The patients wander about and get lost in the street, or even in their own houses; misplace their things, and then think they have been stolen; or take the property of others, and the like. In thought there may be observed incoherence and distraction. The feelings become unstable; childish joy and laughter alternate with phases of painful, often hypochondriac, depression, which may reach the degree of *tædium vitæ*. The patients wander about dreamily at night, busy themselves with their effects without reason, break awkwardly what comes to their hands, and cannot find their beds again. This nightly restlessness is often due to feelings of fear or abrupt ideas of persecution and hallucinations.

In this picture of mental decay there may be episodically melancholic and maniacal states of excitement, as well as delusions of persecution (*vide* page 154). Not infrequently, as further somatic intercurrent symptoms, there are apoplectic and epileptiform attacks, due sometimes to hemorrhages or to softening, sometimes to temporary disturbances of circulation and localized edema. Following these attacks there are frequently paralyses of a focal character (hypoglossus, facial, hemiplegia). If the patients live long enough, they become apathetically demented, unclean, gluttonous, and fall into a state of progressive psychic and general motor paralysis.

The course of senile dementia is chronic, lasting several years, though there are rare cases of acute course lasting only a few months.

Death is usually due to brain complications, pneumonia, affections of the bladder, decubitus, or colliquative diarrhea. Therapeutically we are helpless before the degenerative process which lies at the foundation of the disease. Good food and stimulation of the circulation are all that can be suggested for treatment. The predomi-

nating restlessness of these patients at night seems to be a symptom of relative inanition; at any rate, a full meal at night and spirits frequently have a quieting effect. If narcotics are indicated, opium is best as a sedative and hypnotic, while chloral hydrate, owing to the brittle state of the vessels and fatty degeneration of the heart usually present, is not without danger.

CASE 78.—Senile melancholia. Termination in senile dementia.

Mr. H., banker, aged 65, was admitted to the asylum in the middle of July, 1864. Since May there had been symptoms of melancholia with *tædium vitæ*, great restlessness, nihilistic delusions of being ruined and being unable longer to pay debts. With this there was profound disturbance of consciousness, with weakness of memory, and now and then voices saying he had done senseless things and cheated.

On admission, agitated melancholia with great disturbance of consciousness; hot, red, congested head; troublesome restlessness, which impelled the patient to rub and scratch his body.

Great painful resistance; complaints that he did not know what was taking place around him, that his memory was gone, that he could no longer extricate himself from the continual dilemma of opposite ideas, and that he now knew nothing more of what was taking place in the external world (disturbance of consciousness and hindered apperception). With this, disconnected delirium, constantly crying: "For God's sake, no; what have I done?" (impulsive activity of thought with incapability of following out a series of ideas). To this picture of incoherent, agitated melancholia, with great confusion and disturbance of consciousness, there were added uncleanliness, refusal of food, and nihilistic delusions. He thought himself dead, incapable of running, of changed character, empty, stopped up, decaying, the world was upside down, everything was foolish, and all only for form. Everything was false, lost; no bed, no more food; another, not he, had eaten it. He had lost his memory and become some one else.

These delusional ideas, indicating profound disturbance of consciousness of self and the world, are always expressed by the patient, without deep emotional coloring, in a monotonous and desultory way. There was a regular alternation of relatively quiet and restless days to be noted, and in the latter the patient denied everything. During the latter the patient was entirely negative, very resistive, scratched his face and body, and refused food. Distressing anxiety and senile pruritus seem to be the cause of this constant scratching. Now and then complaints of headache, dizziness; hot congested head; occasional complaints of voices and foul odors, which gave rise to the delusion that everything was in a state of decay. Toward the end of 1864 emotional affects diminished, while the nihilistic complaints continued, always more fragmentary and incoherent, and the disturbance of consciousness made constantly further progress. The heart-sounds were continuously dull and impure, and the arteries rigid and tortuous. In the course of the summer, 1866, there was progressive marasmus. In June, hematoma of ear; in July, general furunculosis. In March, 1867, the patient, in an advanced state of dementia, with the remains of nihilistic delusions without affect, died of pneumonia.

Autopsy (twenty-four hours after death): The skull is heavy, bone compact, hard, with disappearance of the diploë. In certain places on the inner surface of the frontal and parietal bones there were osteophytes the size of poppy-seeds. Sutures complete. Dura firmly adherent to the skull, and surface matted. Its inner surface covered with rusty-colored membrane of new formation. Only a few drops of serum in the subarachnoid space. Pia in general anemic; edematous over the frontal lobes; injected only over the right occipital lobe, with the cortex beneath softened to a pulp. Section shows this to be of gray-white color and softened; the white substance beneath to the extent of three centimeters in a state of gray-white softening (white encephalomalacia). The pia is easily removed from the cortex, and nowhere thickened. The first and second frontal, as well as the anterior and posterior central convolutions, are much below the general level, and flattened. The cortex of the hemispheres is everywhere yellow in color and translucent; the white substance, noticeably in the posterior lobes, presents dilated vessels. The ventricles are not dilated; the ependyma is a little thickened.

The carotids are extremely atheromatous, with knots here and there, and the basilar artery presents in places cirsoid dilatation. Other parts of the brain, as well as the spinal cord, are without apparent change. The lower lobe of the right lung is in a state of gray hepatization. The mitral valves are thickened and retracted. The aortic valves atheromatous, but sufficient. Heart-muscle yellowish brown and fatty on section. On the superior wall of the arch of the aorta there is a rough, hard, atheromatous spot the size of a silver quarter. Smaller spots of the same kind are found on the wall of the descending aorta. For the extent of half an inch the large intestine is constricted to the size of a finger at a point six inches from its termination.

Anatomic diagnosis: Atrophy of the brain; encephalitis of the right posterior lobe of the brain; internal pachymeningitis; right croupous pneumonia; arteriosclerosis; fatty degeneration of the heart.

Case 79.—Senile dementia. Intercurrent mania.

K., artisan, admitted December 18, 1875. He had one insane sister, and in 1848, for several weeks, he was maniacal. He was an industrious, moral workman, and had accumulated quite a competency. In the course of the year 1875 the patient became forgetful, distracted, suspicious, and avaricious. He often had urinary troubles (hypertrophy of the prostate). In October an apoplectiform attack with transitory paralysis of speech. After this the patient was sleepless, wandered about restlessly, and began to make silly purchases and indecent proposals to women. At night he went about in saloons. When his relatives remonstrated with him for this, he became brutal and said he thought he had a right in his declining years to enjoy life; indeed, he was growing younger and healthier every day.

After December 10th he had seven epileptiform attacks, and since then the patient had become more excited, more restless, making senseless plans, drinking, and throwing his money away. He entertained ideas of building enormous breweries, great buildings, a whole street which should be named for him. One day after he had cut off the wings and then the heads of his geese, and finally began to threaten his relatives, he was sent to the clinic.

On admission the patient appeared congested, with shining eyes and myotic pupils. At first he did not recognize his situation, made senseless

plans, and was impulsive and even obscene toward the female nurses. He was full of plans and wishes, talkative, without reason, and sleepless. Silly manner, superficiality of affects, lapses of judgment and memory, great forgetfulness; and the ease with which his attention could be distracted gave to the maniacal picture features of mental weakness. Physically there were, along with decided fluxion to the head, symptoms of advanced senility, rigid and very tortuous arteries, and emphysema.

The patient was very unstable in his sense of time and place. At night he slept little, wandered about in his room, looked for his things, could not find them, and during the day he went about in a dreamy state, building air-castles, saying that the whole hospital belonged to him, and that he would change it into a palace.

Aside from slight tremor of the lips, there were no motor disturbances. Several times, with violent congestion of the brain, there was violent, painful, angry excitement, in which he tried to escape and became brutal and even aggressive toward those around him; but he was always easily quieted.

Under treatment with baths and injections of morphine (0.01 gram twice daily) the excitement subsided toward the beginning of January, 1876. The patient had quiet nights, corrected his ideas, and showed even traces of insight into his disease. The mental weakness now became more apparent, especially in his childish weeping because he was not allowed to return to his family.

Toward the end of January it was possible to return him to his relatives. He was quiet, but much demented.

Case 80.—Senile dementia. Delusions of persecution.

M., aged 78, pensioned official, was admitted to the asylum October 2, 1874. His mental powers had failed during the last three years. The patient was forgetful, distracted, had often lost himself in the street and in his own home, mislaid his things and thought that they had been stolen. Four months ago there was an apoplectiform attack. Since then the patient had been restless, suspicious, expressed at times delusions of poisoning, was afraid of thieves, anxious at night, and sleepless. The mental weakness made great progress. He had small sense of time and place, with frequent oppression in his chest, difficulty of breathing, headache, dizziness, and increasing weakness of the legs, with which there was manifestation of partly hypochondriacal, partly hostile ideas of others.

A short time before admission he had pronounced delusions of poisoning, and since these concerned his relatives and were to the effect that they were seeking his life, he became more and more excited and finally refused food, and this led to the decision to send him to the asylum.

The patient presents an exquisite picture of senile marasmus. The arteries are rigid; the pulse irregular, interrupted; the lips are cyanotic, and there is edema of the feet and eyelids; and cardiac dullness is decidedly increased. The first sound of the bicuspid valves is replaced by a murmur.

The patient is very weak mentally, uncertain in his sense of time and place, and his memory is so feeble that he cannot retain recent impressions. He is easily diverted and whines childishly. He sleeps little at night, wanders around dreamily, disturbed by apprehensive restlessness, has fear of thieves and murderers, and cannot find his way back to bed. He says that his people wish to poison him. He has seen his relatives put arsenic on his plate. He

has never tasted the poison, but he has felt its effect in numerous physical symptoms (due to his cardiac trouble), and thus recognized why he cannot sleep.

In the asylum he often shows suspicion, refuses medicine because it has fly-powder in it, and food because there is arsenic in it. However, his resistance is easily overcome. Very frequently he thinks something is put in his food in order to keep him from sleeping. His relatives persecute him here also. They have sent him here in order to rob and get control of his whole fortune. Profound affect is wanting; only now and then, especially at night, are there spontaneous attacks of fear, which call up into consciousness the delusions. He then cries and weeps like a child, calling for help. Frequent attacks of dizziness. Progressive loss of memory and clouding of consciousness.

After the middle of December, decided difficulty of respiration and general edema were the signs of cardiac weakness. Death with symptoms of edema of the lungs, December 25th.

Autopsy: Hyperostosis of the skull. Dura and pia without change. Frontal and parietal convolutions narrowed, and here and there below the general level. Extreme atheroma of the arteries at the base.

On the basal surface of the left occipital and left parietal lobes there is a longitudinal encephalitic focus filled with cloudy serum and covered by the pia, which extends into the inner half of the third temporal convolution, on the one hand, and, on the other, reaches to the posterior horn of the ventricle and communicates with it. The walls of the sack are covered with a membrane and are ocher colored. The left perforating artery is changed into a strand of connective tissue and is lost in the cyst.

A second cyst three centimeters long and yellowish in color occupies half of the transverse convolution which forms the second frontal sulcus; a third and similar cyst occupies the spot where the angular gyrus passes into the second occipital convolution; and a fourth lies in the calcarine fissure. The brain is edematous and anemic. The heart is twice the normal size, the left ventricular wall thickened. The aortic and tricuspid valves, thickened and shrunken; the beginning of the aorta dilated, its walls in the initial stage of atheromatous degeneration. The heart-muscle is yellowish and fatty.

PART SIXTH.

Arrest of Psychic Development.

In any of the phases of the process of development through which the central nervous system must pass until it reaches its individual completion, disturbing influences may intervene which hinder the development of the brain or one or more of its parts, or even cause complete arrest of development. As a result of this, as a rule, the functional activities of the psychic organ are lastingly interfered with or profoundly injured. Such mental defects, or deficiencies thus induced, are commonly called arrests of mental development.

Clinical consideration of these mental insufficiencies encounters great difficulties, since there is an immense number of faculties, alterations of which differ in nature and intensity; and moreover they occur at different periods of psychocerebral development.

In general, two clinical groups may be differentiated, in the first of which the intellectual faculties show marked defect (intellectual idiocy) and this dominates the whole clinical picture; while in the second group, though intellectual defect is not entirely wanting, it is much less prominent than the distortion of the ethic functions (moral idiocy). There are, too, in both groups, numerous variations of degree (idiocy and imbecility, moral or intellectual), as well as numerous clinical varieties (active, or erethistic, and passive, or torpid, forms). Clinical cases of moral idiocy must be regarded as milder, since only the higher intellectual functions are profoundly touched, with escape of formal thought and power of judgment (understanding); but the individual, nevertheless, is robbed of what is generally called reason: *i.e.*, he is unable to acquire and appreciate the fundamental principles and ideas of higher morality, and in consequence reasonable views of life as the motive of purposeful activity and as the fundamental condition of character, with insight into the value, consequence, and duties of the individual in society, are not developed.

Thus this slighter form of mental insufficiency is practically and socially of greater importance, because the moral defect causes lack of mental independence which may reach the degree of absolute in-

capability of winning a social standing, and living in accordance with it.

Anatomically cases of moral idiocy are less severe, for the brain-changes upon which it depends may not be observable macroscopically, nor have scarcely teratologic significance; the psychic development is never arrested, only distorted or manifested in a perverse way (as transition to the psychic degenerations, *vide* page 359).

CHAPTER I.

Intellectual Idiocy.

UNDER this general term all states of mental weakness, whether congenital or acquired during the developmental period of the psychic organ, are grouped. These cases of psychic insufficiency present a progressive series of symptomatic pictures which stretches from states of mental nullity to the degrees of feeble-mindedness which approach a state of normal intellectual development.

As a subclass of idiocy, states of congenital mental weakness are to be separated in which the mental disturbance, as a result of peculiar injurious causes, is accompanied by a corresponding degree of bodily degeneration. Such cases are called cretinism. They constitute a form of idiocy. This is the general designation. A peculiar etiologic variety of cretinism is the so-called Alpine cretinism.

The causes of idiocy may be active during fetal life, during birth, or during the years from birth to puberty. Among the causes which even at the moment of conception or during embryonic life may be active are, first, certain factors which lie in the generative elements and lead to malformation of the brain or of the cranium. These malformations consist of abnormally early synostosis of the cranial sutures, with consequent inhibition of the development of the brain; or of independent arrest of development of this organ, or of a single part of it that is essential for the activity of the psychic processes.

Especially important factors in the causation of idiocy on the side of progenitors, as has been shown by statistics, are epilepsy, brain diseases (especially psychoses), continued intermarriage of blood-relations, and drunkenness. According to the experience of Rüer and Flemming, it may even happen that idiots are begotten by parents in nowise burdened, if the moment of conception is contemporaneous with intoxication.

Influences less well established are great mental exhaustion in the progenitors, inanition and high degree of anemia, emotional excitement of the mother during pregnancy, and physical injury to

the mother, especially traumatism of the abdomen. That syphilis may also be effectual is shown by a case reported by Guislain ("Lécons Orales," ii, page 93), in which a man under treatment with mercury for syphilis begot a child that was weak-minded from birth, while all his other children, before and after, were healthy and normal mentally.

In spite of such causes lying in the generative elements, it may happen that the brain diseases resulting from them, and which lead to idiocy, reach their development only after birth, or from the third to the seventh year.

Besides these influences affecting the embryo, there are certain telluric influences which, in large part, cause endemic and Alpine cretinism.[1] The special injurious influences of a telluric kind are not yet satisfactorily understood. The principal regions where this endemic curse exists are in the high mountains of the earth with their connected chains: in Europe, in the Alps; in Asia, in the Himalayas; in South America, in the Cordilleras. That these injurious influences are effectual during fetal life, and not after birth, is proved by the fact that cretinism is transmitted to descendants even when the child was begotten in a place widely separated from the endemic region (in a slighter degree, to be sure) and that it is transmitted to following generations, and only finally after a long period of separation from the endemic region, and by crossing with unaffected families, gradually do the last traces of cretinism disappear.

Race-crossing alone does not cause cretinism to disappear. In order to obtain this result it is absolutely necessary that the family leave the endemic region. This is corroborated by the fact that individuals absolutely healthy who immigrate into an endemic region may procreate cretins. Moreover, high-grade cretins do not have descendants; for the men are almost always impotent and the women commonly sterile.

Where cretinism is endemic, it is certainly the expression of degenerative factors, signs of which manifest themselves also in the non-cretin population by a shorter average period of life, by smaller capacity for intellectual and physical work, by the decrease of the fecundity, and by the augmentation of the percentage of deformities and mental and nervous diseases (Zillner).

During birth traumatic influences may affect the infantile brain and lead to idiocy; for example, injuries due to a narrow pelvis, forced delivery with forceps, fall on the head in precipitate labor.

In the vast majority of cases the injurious influences, to some of which we have already alluded, exercise their influence first during the years of childhood. They are extremely numerous. Head in-

[1] The cause of Alpine and sporadic cretinism is defect or absence of the thyroid gland. The causes of defect or absence of the thyroid gland are various, endemic or accidental. Goiter is remarkably frequent in mountainous regions.—TRANSLATOR.

juries must be mentioned here. Thus, Mitchell (*Edinburgh Medical Journal,* 1866, April, page 932) found that, in 2 per cent. of all the idiots in Scotland, their disease was ascribed to external injurious influences, among which head-injuries took the most prominent place. Köstle ("Endemic Cretinism," page 95) also reports 48 cases of idiocy in children, whose trouble was ascribed exclusively to a fall on the head.

Without doubt unsanitary conditions of houses, especially in the dwellings of the proletariat in large cities, where light and sun are wanting, with uncleanliness and crowding, may cause sporadic idiocy and cretinism. Further causes are hyperemia of the brain due to wrapping up the head, sleeping in a hot oven, and abuse of opiates and brandy as quieting means (Griesinger).

To these may be added lack of care, uncleanliness of the child's body, insufficient food, exhaustion of the infantile organism by injurious influences of all kinds, and acute diseases, especially the acute exanthemata which cause brain complications; and, further, epilepsy and early onanism. In hereditarily tainted individuals, even at the time of puberty, without any external cause, brain disease (hyperemia, inflammatory edema?) may occur, which limits the further development of the brain, and causes a regression from the level of mental development already attained. The result then is a lasting condition of feeble-mindedness, or dementia.

As far as the anatomico-pathologic processes lying at the foundation of idiocy are concerned, it may be said in general that they are seldom acute, usually chronic, and consist of congestive, inflammatory, or other nutritive disturbances of the brain and the membranes, and very frequently also of the cranium.

No special alteration of the central organs lies at the basis of these conditions, not even in Alpine cretinism; but it may be said in general that the causes of cretinism lie primarily in the anomalies of the skull.[1]

Macroscopically as the causes of idiocy we find: general or partial atrophy of the brain due to hyperemia, inflammation, softening, meningeal extravasations, hydrops of the arachnoid, internal hydrocephalus. These hyperemias are not infrequently the result of caloric influences (lying in overheated atmosphere, warm rooms, keeping the head too warm, insolation), or of obstruction to respiration and circulation due to diseases of the respiratory or circulatory organs (whooping-cough). Meningeal extravasations occur during birth or as complications in acute diseases.

The abnormalities of the bones of the skull consist, for the most part, of premature synostoses. The microscopic examination of the brain of idiots has disclosed: shrinking of the ganglion-cells of the cortex, with clouding of

[1] Anomalies of the skull, etc., are the results, and not the causes, of cretinism.—TRANSLATOR.

the interganglionic masses, and obstruction to the circulation in the cortex due to obliteration of many of the veins into which the capillary vessels immediately empty.

When these various macroscopic and microscopic processes are carefully considered, the most striking things found in the brain in the form of arrest of development or as results of earlier disease processes are:—

1. Abnormal smallness of the brain in all its diameters. Under such circumstances there is a simple arrest of development, a miniature brain, well proportioned in all its parts, which, however, may be unequally developed in some portions. There are some cases in which, with a comparatively good volume, there is simplicity and poverty of convolutions. The cause of this arrest of growth of the brain, on the whole, is not infrequently early primary synostosis, but there are other cases in which the sutures remain open, and the cause of the arrest of development lies in the brain itself. In these cases the skull is often abnormally thick, or hydrocephalus exists; or there may be sclerosis of the brain. In general, the development of the brain and the development of the skull are only in subordinate relation, as they develop, for the most part, independently.

2. Partial arrests of development of the brain. The arrest may affect the anterior or the posterior lobe; or there may be arrest of growth of one hemisphere, as a result of unilateral synostosis, or original defective development; or of encephalitis and focal changes. Other findings are distortion of the medulla oblongata, and unequal size and asymmetry of portions at the base. Sometimes the spinal cord is implicated in this way. The central canal of the spinal cord may also remain open.

3. So-called cases of porencephaly: *i.e.*, cases in which portions, more or less extensive, of the convolutions and the centrum semi-ovale are wanting, so that there is a free opening into the ventricles. These spaces are then filled with abundant serum, forming a bladder; or a meshwork of the internal membranes incloses it. Sometimes the skull protrudes at such a point. This condition does not seem to be the result of arrest of development, but of a destructive disease (usually fetal). As a rule, in such cases there is paralysis and contracture of the opposite side of the body.

4. Absence of portions of the brain, as of the cerebellum, the pineal gland, or the corpus callosum.

5. A very frequent finding is chronic congenital hydrocephalus, or hydrocephalus of very early origin, especially with open fontanels and macrocephaly. It is usually primary, sometimes secondary, and due to atrophy of single portions of the brain.

6. Encephalitic processes, focal or diffuse, especially with consecutive cerebral sclerosis and atrophy of the affected parts. These processes occur during fetal life and up to five years after birth. Idiocy, under such circumstances, is usually accompanied by hemiplegia, contracture, and also often by epilepsy (Griesinger).

In those frequent cases in which a child, up to this time well developed, during dentition develops fever, has convulsions, becomes delirious, and recovers quickly, but becomes an idiot, the causes to be considered especially are:—

(a) Congestive or inflammatory processes affecting the cerebral membranes, as result of which hydrocephalus easily arises.

(b) Encephalitis, which, after the subsidence of the acute brain disease, is followed by arrest of development of the brain in the parts affected. Such processes are to be assumed, especially when one side of the body ceases to grow, or when unilateral spasm, paralysis, or contracture comes on (Griesinger).

7. There are infrequent cases in which the brain is hypertrophied *in toto* (Virchow, Baillarger, Robin).

8. The most infrequent conditions are remarkable anomalies in richness of gray substance, with even heterotopic development of it in places where it is not normally found; as, for example, in the white substance of the hemispheres.

The anomalies which concern the skull are either secondary, as already indicated, or primary. The former are due to arrest of development of the brain as a whole or in part. As a result of this there is corresponding early synostosis of the skull, or ossification, as a result of which general or partial arrest of development of the skull occurs.

The primary cranial anomalies which principally interest us here have to do with the vertex or the base of the skull or with both. They are founded upon an arrest of growth of the bones, as a result of inflammatory processes affecting nutrition at the sutures (Virchow, Welker), with the premature synostosis which results; or due to the insufficiency of nutrition of the cranial bones as a result of precocious obliteration of their vessels (Gudden). L. Meyer rightly makes rachitic processes responsible for a part of these anomalies of the skull. Out of this arise numerous distortions of the cranium and malformations, with or without synostosis of the sutures, according to the nature of the cause (dolicho-, lepto-, spheno-, klino-, brachy-, or oxy- cephaly).

If the arrest of development of the cranium is uniform and general, simple microcephaly results, the skull being well proportioned. If, on the other hand, it affects the vertex and not the base, there results a very particular type of head, body, and mind—the so-called Aztec type. Such individuals are microcephalic and dwarfish, but well proportioned, and even elegantly formed. The root of the nose, as a rule, is prominent, so that the brow is on a plane with the nose (Griesinger).

Gratiolet has examined a few cases in which the skull was small, with very thick bones and synostosis of the vertex, but the base was but slightly ossified, being almost entirely cartilaginous. The pars petrosa and ethmoid were larger than normal, and the space containing the cerebellum was extremely large in all directions. In consonance with this, the cerebellum, medulla oblongata, and spinal cord were extremely well developed, as well as the sense-organs and their nerves, while the superficial portions of the cerebrum in some cases showed fewer convolutions than the orang-outang.

The enormous development of the parts of the brain serving motor functions, in contrast with the lack of development of the psychic centers, due to compensatory enlargement of the base of the skull, corresponded with the mental condition. Such individuals are extremely lively, moving like "birds, and with movements well co-ordinated. They are gay, excitable, curious but moody, almost devoid of attention, and very weak-minded, even though they speak well."

Griesinger likens them to birds; and their narrow, low, short heads; their pointed noses, with wide, high roots; and their nervous eyes recall very strikingly the physiognomy of a bird.

The opposite of this condition is the basilar synostotic form due to primary premature ossification of the bones at the base, as it occurs mainly, but not exclusively, in endemic and Alpine cretinism. As is well known, during fetal life there are three cartilaginous discs, between the anterior and posterior sphenoids and between the sphenoid bone and the basilar. The first two are quite insignificant and ossify normally shortly after birth. The cartilage which lies between the sphenoid and the basilar ossifies only at the age of 15, and in certain individuals even as late as the age of 20; so that the base of the skull has at least 15 years of growth. If this ossification takes place too early, it causes a form which ordinarily is normal during the first half of the period of fetal life, and which produces the external form of the cretinous skull: *i.e.*, a more pronounced flexion of the base of the cranium toward the vertex, a narrow angle of union of the sphenoid and the basilar process (sphenoidal kyphosis), and a more pronounced clivus.

This gives rise to a very characteristic physiognomy, quite the opposite of the Aztec type; namely: prominent nose; deep, broad, nasal root; widely separated eyes; broad, shallow orbits; prominent cheek bones and jaw (prognathism).

A further result is flatness of the palate, narrowness of the great wings of the sphenoid, leading to narrowness of the middle cranial fossa, which prevents development of the fore- and mid- brain (Griesinger).

Tribasilar synostosis is thus the anatomic point of departure of this special form of cretinism, especially Alpine cretinism. However, this is not the only cranial deformity that may cause Alpine cretinism. All other possible forms may bring about the same result. Along with these arrests there may be other anomalies of the skeleton, as well as other degenerative affections of other parts of the body. Sometimes the individual is a dwarf as a result of premature ossification of the cartilages of the epiphyses.

As a rule, the head is too large in proportion to the body in general. The face has a senile expression. The head is placed on a small, medium, or even infantile body. With this the lips are thick, the eyelids wrinkled, the nose receding, and broad and deep at its base. The body is puffed and wrinkled as a result of hypertrophy of the skin and adipose tissue. With this there is a goitrous degeneration of the thyroid gland. In contrast with the Aztec type, the mentality is apathetic and torpid, intellectual life may be reduced to zero, and speech may be impossible.

The clinical consideration of idiots and cretins must be, in the first place, with reference to the essential and important functional disturbances of mind. Classification in accordance with the degree of mental infirmity in these conditions that vary infinitely is difficult.

On the whole, we may divide them into idiots and half-idiots (imbeciles), complete and half- cretins. An attempt at further differentiation may be made in accordance with the condition of speech as the most important criterion of mental development and capability of development. Thus Krauss distinguishes:—

1. The profound degree of idiocy: a state of absence of the senses in which speech is entirely wanting or reduced to mere inarticulate sounds.

2. Idiocy: in this condition the speech is but little developed, the vocabulary limited to words related to the sphere of the most primitive material needs.

3. Mental dullness: speech in this condition is no longer fragmentary, simple formation of sentences being possible, but it is quantitatively and qualitatively at a childish level and limited to sensual ideas.

4. Imbecility: in this condition speech is more elaborate and approaches that of normal individuals, but it is poor and full of defects as soon as it is concerned with abstract ideas.

For our clinical purpose it is sufficient to distinguish two degrees, namely: idiocy, in which the formation of abstract ideas (concepts and judgments) and a corresponding vocabulary are wanting; and imbecility, in which this faculty is present, though in limited degree, never attaining the height and extent of the average normal individual.

Psychic Symptoms.—At the lowest level of idiocy, mental processes are almost entirely wanting. Sense-impressions are limited to objects which satisfy hunger, and only the need for satisfaction of hunger causes such low organizations to make instinctive movements for the fulfillment of this purpose. The sexual instinct is wanting or present only in slight degree. The satisfaction of the desire for food is the point around which all psychic processes are centered. Instead of conscious activity with an idea of a purpose, there is merely instinctive movement induced by external stimuli, or by an intense internal need, and which, at most, may be mechanically directed by training and practice.

The idiot remains lazily quiet because motives for movement are wanting. In the most profound degree of this condition, that of apathetic idiocy where there are no ideas, the motor side of life is limited to purely reflex movement and automatic acts, with, perhaps, at most, certain instinctive movements and instinctive desire for food. In the instinctive satisfaction of the latter, however, the idiot is not even in the condition of an animal able to seek his food. Without choice he puts everything in his mouth that comes to his hand. Such low organizations are as helpless as newborn children. They would starve if they were not cared for.

The absence of psychic stimuli lends also to the attitude of the higher idiot characteristic features of relaxation and lack of energy which are also, in part, due to the fact that the extensor muscles are less innervated than in normal individuals. Too, even when paralysis and muscular insufficiency are absent, gait and attitude present something heavy, awkward, and uncertain. Numerous as the degrees of idiocy may be, the limit that separates it from imbecility always

consists of this: that its defective concepts cannot be separated from the sensory elements nor utilized in the formation of abstract comprehensible ideas, judgments, and notions.

Too, the reproduction of any idea is incomplete, only resulting from external stimuli or some intense internal need. The activity of ideas is thus purely mechanical as originally formed. The complete idiot is incapable of anything like emotional activity; he has no compassion, no social sentiment; he does not even feel a need of companions. He enjoys the benefits of social life without having any ethic comprehension of them. Reaction is possible in only one direction, namely: when his ego feels a need or is hurt. Under such circumstances he reacts with anger which may become extremely violent and be manifested with a brutality that surpasses all bounds. Such explosions have the features of paroxysms of rage in which consciousness is entirely wanting and of which the individual has no memory. Sometimes also there are spontaneous or even periodic outbursts of anger and mania under the influence of fluxionary hyperemia of the brain, especially when the skull is small.

In imbeciles there are also insufficiencies of psychic activity. The sensorial activity shows defects in that in imbeciles the perception of sense-impressions is lower, and many sensory perceptions escape them. Necessarily there is therefore poverty of ideas, especially since the sensory impressions registered are not completely elaborated as in the normal individual; for association and reproduction are slower and defective.

Thus the formation of abstract ideas and judgments is imperfect, and judgment of abstract things is one-sided, indistinct, and largely influenced by the authority of others. The feeble-minded are credulous, easily duped, have no opinions of their own, and depend upon others. The inner nature and the finer relations of things escape them, and they are likewise incapable, when once the real point of the matter has been taught them, to give it the right word. The vocabulary is always poor the moment abstract ideas are concerned, while in the sensual sphere they are capable of expressing themselves sufficiently.

The inner impulse of the normal individual to look for the foundation and nature of things and their changes is absolutely wanting in the imbecile. He accepts things as they are, or manifests but a kind of stupid curiosity. Higher mental interests and purposeful activity are foreign to him.

In the gratification of the ordinary material needs of life his being is satisfied; he has no time and less desire to occupy himself with abstract things, which weary him and cost him too much effort.

This incapability in the intellectual domain manifests itself also in ethic feeling. The feeble-minded individual is necessarily an egotist; he overestimates his own person and his activities, as a result of which he becomes the object of derision and ridicule. The welfare of humanity does not touch him; only interference with his own personality induces stormy outbursts which then easily pass beyond normal limits. His pleasurable emotions easily pass into foolish excess, his depressive feelings into raving or confusion; and these are induced with especial ease as a result of fear, and then degenerate into terror.

The imbecile may be a useful member of society; for he may acquire some habitual occupation, especially if it be a mechanical one; and, once acquired, he carries it out well, because he gives his entire attention to it. But his activity is mechanical, without capability of alteration or of combining or producing anything new. He has no personal and new ideas, but lives upon knowledge and experiences that he has acquired at great cost. Necessarily, as a result of this limited activity, spontaneity and purposeful striving, as seen in the normal individual, are wanting. Slight hindrance is sufficient to perplex him, for he is not able to surmount it; and being unable to think for himself, it suffices often to advise against a thing to arrest his voluntary efforts; just as, on the other hand, the authority of another may easily induce him to do his best or to commit senseless acts.

Esthetic and superior moral judgments are scarcely possible to the imbecile. In their place he possesses the moral judgments of others which he has simply appropriated in memory and reproduces automatically. Almost all his esthetic, religious ideas and judgments are but efforts of memory and reminiscences of employment, which as time goes on are reproduced more and more imperfectly and slowly. However, the sentiment of justice and of duty may be very well developed, but it never has the profound basis of sentiment and ethic opinion so solidly rooted in the character of the normal individual. It is always a semiconscious movement, an inspiration of consciousness, which utilizes the moral judgment of others. This is why, when an imbecile repents of an illegal act he may have committed, the repentance is merely superficial.

An interesting phenomenon in a certain class of idiots is the existence of isolated, instinctive faculties, comparable to the instinct of certain animals, for certain kinds of work, or for certain artistic efforts, which are the more astounding because the rest of the intellectual life is so inferior. Such capabilities are observed especially in the form of remarkable talents in the direction of mechanics, drawing,

and music. There are other isolated cases in which there is an astonishing memory for words or for figures. Such isolated endowments are never met in accidental idiocy, but only in cases of idiocy due to hereditary degenerative causes.

SOMATIC SYMPTOMS.—With these disturbances of the psychic functions, in the larger number of cases there are other functional disturbances dependent upon lesions of the central organ. In the domain of the higher senses there is frequently amblyopia due to atrophy of the optic nerves or retinitis pigmentosa, deafness, and defects of smell and taste (in some of these cases the olfactory lobe has been found atrophied). The cutaneous sensibility is not infrequently dulled or there may be anesthesia. Strabismus is frequent, less frequently due to spasm than to paralysis of the ocular muscles. Stuttering is also frequent.

Numerous central motor disturbances are observed in the extremities:—

(a) Spasm, sometimes partial and limited to toes, arm, or leg; sometimes general and choreiform. Athetosis also occurs. Epileptiform spasms are frequent. These may have a double significance: either they are co-ordinated symptoms of the mental infirmity, and due to the same anatomic causes; or the epilepsy is the primary disease and has induced the idiocy.

(b) From contractures there may be spastic club-foot, caput obstipum, etc. Symptoms of spastic spinal paralysis are not infrequent, and are usually due to polioencephalitis (porencephaly).

(c) Paralytic conditions are frequent. Many high-grade idiots can neither stand nor walk. In others there is difficulty of maintaining equilibrium in walking. Not infrequently there are the remains of anterior poliomyelitis in the form of paralysis with muscular atrophy, and absence of reflexes and electric excitability. Spastic paralysis due to hydrocephalus is less frequent.

(d) Finally there remains to be mentioned automatic instinctive movements, as well as choreiform disturbances, which, according to Schüle, are to be regarded as the expression of direct processes of excitation affecting the psychomotor centers in a state of incomplete development.

There are also marked disturbances of the sexual functions in idiots. In high-grade idiots it is entirely wanting. The genitals are frequently small and distorted. The menses come on late or not at all.

There is impotence or sterility. Even in idiots of moderate grade the sexual instinct is weakly developed. Sometimes stormy expression of it is observed. Onanism occurs in the milder cases.

Trophic anomalies due to central causes are: dwarfism; a thick, fleshy tongue; thick lips, and bad teeth that soon decay, seen, as a rule, in the endemic form.

Upon the basis of arrest of mental development the most varied psychoses may occur. In consonance with the low mental state in idiots, I have seen furious mania. In imbeciles I have seen the various psychoses as they occur in fully developed individuals, with the exception of the insanity of imperative ideas. Dementia paralytica is not infrequent. Melancholia is frequent, especially in the form of a psychosis of fright. Slight causes—as, for example, death of a domestic animal or a severe scolding—may induce it. The direction of melancholic ideas is very frequently that of religious or demonomaniac delusions. Panphobia, especially on entrance into a hospital or asylum, is quite usual. These feeble-minded melancholics are difficult to quiet and do not bear isolation well; therefore it should be avoided as much as possible. Owing to the poverty of the mind, the psychoses with systematized delusions (melancholia, paranoia) present but slight elaboration clinically; and, besides, these imbeciles do not possess the necessary vocabulary to express satisfactorily their state of mind. Psychoses in imbeciles disappear more slowly and with greater difficulty than in fully developed individuals. In its organic as well as its psychologic relations the psychosis is more difficult to overcome, and mental treatment has a narrower space for activity. In any event, the prognosis is graver. If the disease be overcome, then homesickness that comes on during convalescence often requires early discharge—the least of two evils.

Course and Prognosis.—With reference to the course, owing to the variety of the anatomic processes which lie at the foundation of idiocy, little can be said in general. The processes that arise before birth or in the first years of life are frequently arrested and leave behind stationary states of idiocy. When idiocy develops out of epilepsy or hydrocephalus it frequently has a progressive course, and the single series of epileptic attacks or the effects of inflammatory hyperemia form the steps by which the mind descends to complete destruction.

Rarely the causal cerebral disease leads directly to death, as in the case of increase of hydrocephalus, acute hyperemias, cerebral atrophy, meningitis, etc.; and idiots in general do not live to a great age because the brain is a *locus minoris*, and in general the physical resistive power is less than in those not afflicted with this infirmity.

Cases of endemic cretinism are most apt to reach an advanced age, but examples of cretins 60 years old are rare. Sometimes a

lasting improvement of the malady occurs. Under such circumstances we have to deal with mild cases due to anemia, or exhaustion due to mental and physical strain, or masturbation.

TREATMENT.—Cure of idiocy is *a priori* impossible, since here we have to deal, as a rule, with brain diseases that have run their course and come under treatment too late. Only in rare cases, when the malady depends upon constitutional syphilis or epilepsy, or is the expression of functional exhaustion or due to palpable cerebral trouble in its beginning, can there be any question of an attempt at cure. Under such circumstances hygienic and medical means may come in play. Attempts to improve hydrocephalic idiocy by iodides have led to no result.

Naturally in the care of children all the etiologic influences are to be taken into consideration in the interest of prophylaxis. Prophylaxis holds out the most hope in cases of endemic cretinism.[1] With removal from the endemic region, which has the greatest effect upon the descendants, but which is only seldom possible, the task is to improve the telluric, atmospheric, and hygienic conditions and thus remove the causes of the general degeneration. In fact, improvement in the education of the people, greater cleanliness, draining of certain regions, etc., have been attended with considerable success.

In the confirmed case of idiocy, the object, as a rule, is to educate by methodic pedagogic training the existing elements of the mind, in order to render the individuals capable of mental and social existence; for the attainment of this object is a great benefit to society, the family, and the individual. This becomes the task of institutions for the feeble-minded, which already respond to this public need in a most worthy manner.

CHAPTER II.

Moral Idiocy (Moral Insanity).

THERE are individuals who, though reared in the surroundings of higher civilization and given every occasion to profit by its blessings, unlike the normal individual have not acquired ethic ideas (religious and esthetic); or, if acquired, they have not the power to use them in the formation of moral judgments and notions, or to employ them as the motive or countermotive of action. A brain wanting in this

[1] The administration of thyroid extract is of the greatest utility in cretinism due to absence of the thyroid gland.—TRANSLATOR.

capability at the present level of civilization may be regarded as inferior *ab origine*—defective; and such a view of the nature of this condition is decidedly justified by the fact that, notwithstanding all efforts of an educational kind, either in the family or at school, as well as all kinds of unpleasant experiences which the individual thus organized must undergo in later life, it is impossible to influence favorably his ethic feeling and conduct.

The cause of this condition is organic, and in such congenitally defective cases found in hereditary conditions, among which the most important are insanity, drunkenness, and epilepsy in ancestry.

In contrast with these congenital cases of moral idiocy, and analogous to intellectual idiocy, there is a similar state observed in individuals that were formerly normal and in whom the defect is acquired (*comp.* page 55). Under such circumstances it is due to grave injury or degenerative processes affecting the brain, and occurs partly as a prodromal manifestation, partly as an accompaniment of them.

The causal conditions of acquired moral defect are anatomic and functional brain changes as they occur after severe head injuries, apoplexies, senile involution of the brain, dementia paralytica, drunkenness, and grave constitutional neuroses (epilepsy, hysteria).

Moral insanity affects the innermost nucleus of the individuality in its emotional, ethic, and moral relations. Since it leaves thought almost unaffected,—the capability of intellectual judgment as to what is useful and injurious,—it makes possible logical judgment, which conceals the defect in all moral judgment and ethic feeling, and this causes those afflicted with moral insanity to appear clinically, if not ethically, in the rôle of immoral or even criminal individuals.

Like Stolz, Regiomontanus, in 1513, expressed the idea that there were wicked, immoral men who were not responsible for their wickedness and yet were hanged by the judges. What the investigator of the sixteenth century attributed to the influence of the stars (born under the sign of Venus) we now attempt to explain by abnormal relations of organization in the individual. In Germany, Grohmann (1819) was probably the first to recognize ethic degeneration as the result of organic causes, and name it congenital moral insanity, or moral idiocy. In 1842 Prichard made one of the first attempts to describe and limit the clinical picture of the disease. The etiologic significance of the abnormal condition as degenerative and mainly hereditary was taught by Morel. The clinical investigations of Brierre, Falret, Solbrig, and others have brought moral insanity into scientific recognition.

When the attempt to sketch the clinical marks of this peculiar defective condition is made, the most striking manifestation, and that which gives it its autonomy, is more or less complete moral insensibility and absence of moral judgment and ethic notions, in place of which purely logical judgments with regard to what is useful and injurious are found. Of course, the laws of morality may be learned and reproduced mnemonically; but if they enter consciousness they remain uncolored by feeling and affects and are dead ideas,—useless ballast in the consciousness of these defective individuals, who thus are unable to find a motive or countermotive for their actions.

To this moral color-blindness, this insanity of altruistic feeling (Schüle), civilization and moral and public order appear to be only an embarrassing obstacle for egotistic sentiment and effort: a condition which fatally leads to negation and even to violation of the rights of others.

Without interest in all that is noble and beautiful, apathetic toward all movements of the heart, these miserable, disinherited individuals appear to be strange on account of their want of filial love and affection for their relatives, and on account of their lack of all social instincts, their coldness of heart, their indifference to the lot of their nearest relatives, and their want of interest in all the questions of social life. Naturally they are insensible to the moral appreciation or blame of others; they have no scruples of conscience or repentance. They do not understand conventionalities. Law has for them only the significance of a police ordinance, and the gravest crime, from their particular and inferior point of view, is a simple infraction of a police regulation. If they come in conflict with an individual or with society, their simple coldness of heart and negation give place to hatred, envy, rancor, and, owing to their state of moral idiocy, their brutality and recklessness know no bounds.

The ethic defect in these individuals of inferior organization in the end renders them incapable of maintaining a place in society, and makes of them candidates for houses of correction, prisons, and hospitals for the insane. They do not arrive at these places of detention until as children they have been the terror of their parents and teachers on account of their laziness, mendacity, and villainy. More mature, they are the disgrace of the family and the plague of communities and authorities on account of their tendency to vagabondage, dissipation, excesses, and theft; and finally they become the most unmanageable in asylums or the most incorrigible in prisons.

With this absence of ethic altruistic feeling, and the egotism necessarily arising out of it, there is a formal affective disturbance, a

great emotional irritability, which, associated with the absence of moral sentiment, leads to the greatest brutality and cruelty, and even favors the occurrence of pathologic affects.

Intellectually, the patient is normal in the eyes of him who considers logical form of thought, reflection, and methodic acts as decisive. The absence of delusional ideas and hallucinations in the disease-picture has also been emphasized by Prichard. In spite of this, and even in spite of the greatest cunning and energy, when it comes to realization of immoral impulses, such degenerates are intellectually weak, unproductive, incapable of actual occupation and ordered activity, incapable of a general education, one-sided, distorted in their ideas, and of limited judgment. Intellectual defect is never wanting in these ethically deficient individuals. Many of them are even actually feeble-minded. They are not merely without insight into the immoral, but they are not capable of recognizing that their conduct is positively absurd and injurious to their own interests. In spite of all the evidence of instinctive cunning which they manifest, they are astonishingly negligent, at the same time, in the most elementary rules of prudence in committing their criminal acts. These defective individuals are not only irrational, but they are also wanting in practical sense. Their highest intellectual work is always defective, even when it is in the form of that which is vulgarly called reason. They have not certain fundamental ideas, and the correctives as well as the faculty to recognize the end and meaning of life are wanting. This fact is manifest in business affairs. They know the value of money as money, but not its value and importance in material and social interests. They throw it away like children. These defects result fatally in absence of effort with a determined purpose.

Formally, in the domain of ideation, along with the incapability of forming ethic ideas and associating them in the formation of moral judgments and notions, the defective power of exact reproduction of ideas is to be noted (page 69).

On the side of the will, the ethic and intellectual defect manifests itself in the complete absence of power of self-direction and control. In general, these degenerates are noticeable for their lack of mental tone and laziness, which are overcome only for the satisfaction of their immoral or criminal instincts. They are born vagabonds, moral weaklings; tramping, begging, and stealing are their favorite occupations; work is a burden.

Owing to the absence or the inexcitability of moral ideas, freedom of action is reduced to the level of arbitrary acts which are,

however, not morally free; and to their eyes afflicted with moral blindness, the most elevated commands of moral law and justice are only useless and incomprehensible legal restrictions. In addition to this state of affairs there is also very frequently to be considered the fact that organic, spontaneous impulses, brought directly into activity by the brain anomaly, impel these individuals to strange, immoral, or criminal acts.

They have still other marks of psychic degeneracy: impulsive characteristics, frequently of periodic recurrence (vagabondage, theft, alcoholic and sexual excesses). Since natural instincts are the cause of acts, these instincts may take on the character of perversity. This is especially the case with the sexual instincts, the perversions of which are usually based upon moral insanity. Since we have to deal here with conditions of individual degeneracy, the clinical phenomena are extremely varied and do not lend themselves to more detailed differentiation.

In accordance with variations in the intensity of the disturbance, we may differentiate conditions of moral imbecility and moral idiocy, comparable with states of intellectual imbecility and idiocy. Practically we may also distinguish between passive and apathetic, active and irritable, moral idiots.

Moral insanity is essentially a stationary infirmity. The processes of puberty, sexual and alcoholic excesses, may have a bad effect and awaken perverse impulsive instincts. Moral idiots are much disposed to react in a psychopathic way to injurious influences. Confinement, especially, suffices to induce intercurrent actual insanity.

Aside from states of pathologic affect and intoxication, not infrequently periodic psychoses are observed as complications of moral insanity, and I have also observed cases of paranoia.

The prognosis of moral insanity, since it is a congenital infirmity, is hopeless. However, it is to be remembered that signs of moral insanity in childhood and youth may develop in association with epilepsy or trauma capitis,[1] and with removal of the cause the mental defect may disappear. The prognosis of these acquired and symptomatic cases is therefore not absolutely bad.

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[1] Thus Wigand (on the duality of mind) relates a case of a young person who was struck on the head with a ruler in the hands of a teacher. There was complete transformation of the patient's moral feeling. At the seat of the injury the skull was trephined and a slight depression of the skull found. Splinters of bone were removed which pressed upon the brain, and the patient was restored to his previous condition.

The diagnosis of these conditions, especially in medico-legal cases, is very important, and the task is one in which the clinical anomalies must be shown to depend upon congenital defective brain organization. The fulfillment of this requirement is indispensable. The monstrosity of a man's mental make-up, the proof of moral defect, are not sufficient; these may be quite as much the result of defective education as of defective organization. The general psychologic criteria do not give much aid here. The examination must be strictly clinical, and it is well at first to leave aside the special diagnosis and ascertain the existence or not of a cerebral abnormality from a general standpoint (*vide* page 231).

The decisive points indicating moral insanity are:—

1. Insane, drunken, or epileptic parents.

2. The existence of anatomic and functional signs of degeneracy, with special consideration of the condition of the sexual life as the most important organic foundation of the development of the moral sense.

3. The existence of signs of an abnormal state of the vasomotor (intolerance of alcohol, etc.) and motor functions (especially the epileptoid symptoms which are frequent in these cases).

If it be possible to make a general diagnosis of a cerebral malady, then the task in special diagnosis is to prove the abnormally early manifestation of ethic deformity at a time of life when the influence of bad example could not be brought in question, and when the external relations have, as is often the case, been favorable (positive efforts at proper education). That the anomaly is due to organic conditions is further sustained by the absolute incorrigibility of the patient.

Further diagnostic light is thrown upon the moral defect by the demonstration of intellectual weakness; abnormal emotional irritability; defective reproduction of ideas; impulsive, perverse feelings depending upon natural impulses and instincts; and finally the periodic character of activity so frequently observed.

Treatment with reference to the states of moral defect, unless we have to do with acquired conditions dependent upon epilepsy, onanism, or trauma capitis, is without prospect of success. These savages in society must be kept in asylums for their own and the safety of society. In passive, torpid cases of moral idiocy, years of mental training in such institutions sometimes elevate these defective individuals to a condition where they are capable of leading a relatively independent life outside of an institution.

CASE 81.—Moral insanity.

F., aged 35, single, servant. Father was eccentric and excitable; mother insane. A brother had periodic insanity, another is peculiar.

At birth the patient was weakly, sickly as a child, and was greatly disturbed by emotions. She was of small mental endowment, could not be taught, cross, obstinate, very irritable, unsocial, gluttonous, inconstant, incapable of continuing any work, coarse, without feeling, and given only to the satisfaction of her moods. Menses at 17 without difficulty. At the age of 19, after the death of her parents, she had to work out. She remained in no place long, was dismissed usually after a short time; for she was lazy, mendacious, chasing after men, and given to prostitution. All efforts of her respectable family to induce her to act otherwise were in vain. She spent, in gormandizing and amusements, money which her brothers and sister gave her. She did the same thing with what she earned, whether it was in service or by prostitution. Feelings of self-respect or of affection for her relatives were unknown to her. Only when she had nothing did she seek her relatives in order to make demands on them. On account of her dissolute life she frequently had encounters with the police, for she offended public decency and gave no attention to police regulations. She found nothing improper in her manner of life. When finally she could get work nowhere her relatives took her. Soon it became impossible for her to remain in this respectable family because of her filth, negligence, laziness, bad manners, brutality, and senseless wasting of money. She went about with her clothing in rags, without washing herself, threw lighted matches on the floor without paying any attention to them, and even would solicit men at night before the door. Finally the family recognized that they had to deal with an unfortunate, and abandoned her.

She went about in the lowest places until one day she was arrested. At this she broke forth in pathologic anger, began to rave, and she was put in the section for observation in the hospital. There she played the injured innocent, paid no attention to the regulations of the house, incited other patients to mischief, had constantly explosions of anger in her great irritability, always about her affair with the police. The police were her enemies, and tried to injure her, though she had never done wrong. Of her moral defect and her inability to direct herself she had no idea. All the unpleasant experiences she had had in her life she attributed to the meanness of others.

The patient is of middle height, extremely ugly, of coarse, sensual features. Moral degeneracy, commonness, and frivolity are, so to speak, written on the patient's countenance. The brow is narrow, flat, the root of the nose deep, the nasal bone wide and flat. Mimic contracture of the muscles of the left corner of the mouth.

The patient is heavy in movement, has a shuffling gait, and scarcely takes the trouble to lift her feet properly. The slightest things cause her to come in conflict with those around her and she bursts forth into anger that in intensity and duration far surpasses physiologic limits. Her power of ideational reproduction is defective, and her description of events is incorrect, even when she has no interest in distorting them. The patient is impossible, coarse to brutality, afraid of work, tries to persuade others not to work, goes about disturbing and scolding others, trying to attract men, and demands her discharge; but she cannot say what she will do when she is put at liberty. The patient was transferred to an institution for chronic insane.

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