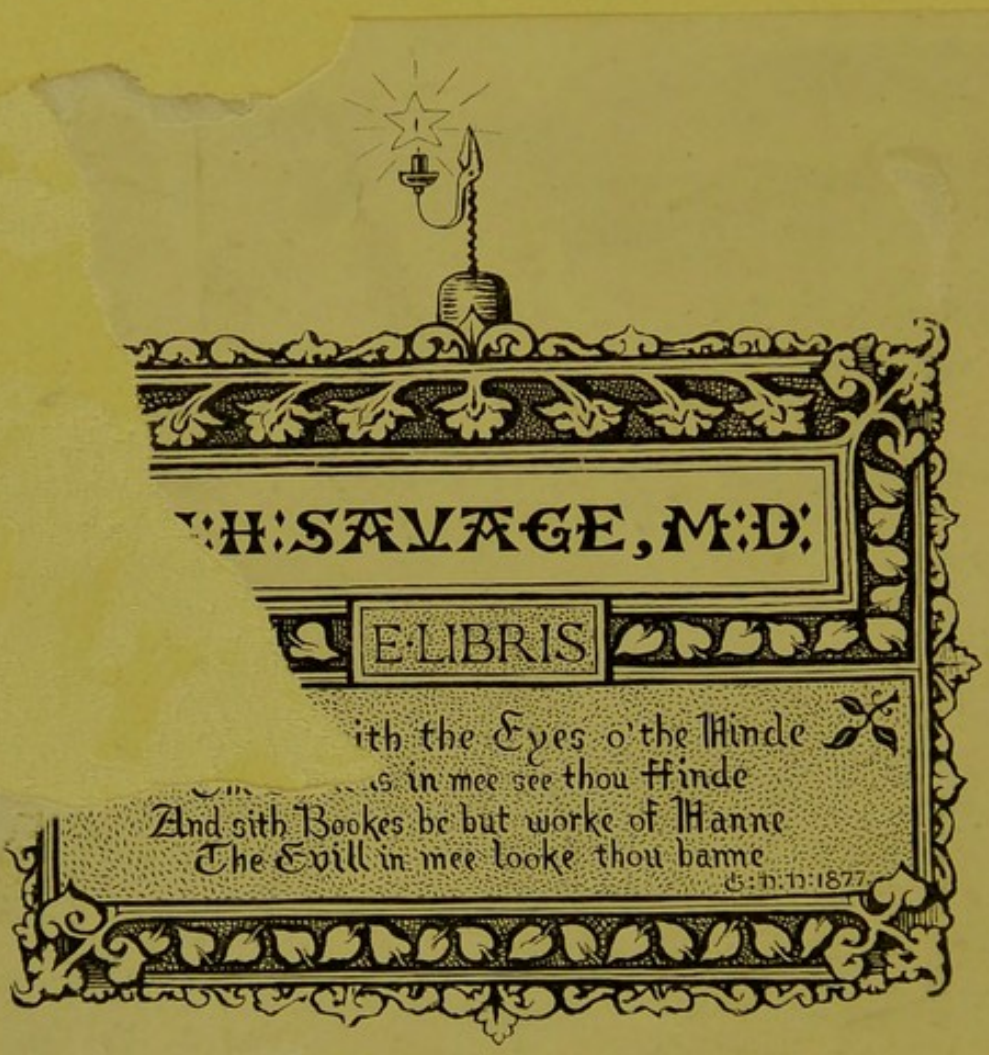
Mental diseases / by Frederick Peterson.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MENTAL DISEASES

BY

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AND SURGEONS, NEW YORK

Illustrated

PHILADELPHIA
W. B. SAUNDERS
925 WALNUT STREET
1899

PRESS OF
W. B. SAUNDERS
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CHAPTER I.

INSANITY.

Synonyms.—Psychosis, Psychopathy. *German:* Irrsinn, Irresein, Verrücktheit, Wahnsinn. *French:* Aliénation mentale, Folie.

It is the object of the author to bring together in the following chapters such matter in relation to the definition, classification, etiology, pathology, symptomatology, and treatment of insanity as will be of actual practical value to the medical student and general practitioner.

The seeker after special information and deeper knowledge of the complex subject of morbid psychology must be referred to the many profound works which deal with this exclusively. These chapters are based upon my clinical lectures given at the Manhattan State Hospital for the Insane and at the Randall's Island Asylum for Idiots during the past four or five years, to the students of the College of Physicians and Surgeons of Columbia University, and to the students of the Woman's Medical College of the New York Infirmary. They, therefore, embody only the facts which I believe to be the most serviceable and useful to those who are often practically concerned with the early diagnosis and prognosis of insanity, and who must be the first arbiters as to the course of care and treatment to be pursued.

Definition.—The difficulty of making a rigid definition of insanity is recognized by all who have attempted it. So various are the manifestations of mental aberration, so many the faculties involved, so different the degrees of deviation from the normal, it is no wonder that the expert hesitates and often fails in the effort. The definition, too, must include idiocy, and must exclude certain states of transitory mental disorder, such as the delirium of fevers and of intoxications.

The noted English jurist, Lord Justice Blackburn, once said, while giving evidence before a committee of the House of Commons: "I have read every definition which I could meet with, and never was satisfied with one of them, and have endeavored in vain to make one satisfactory to myself. I verily believe that it is not in human power to do it."

Fortunately, we are not often called upon to give a definition of insanity, and usually we may reply that insanity is a symptom of so

many obscure pathological states, and appears in such divers forms that a narrow definition is not possible. However, the practitioner may find himself in the witness-box some day, and it is not uncommon for one of the legal examiners to ask of the witness in a mental case a definition of insanity. If the witness be wise, he will answer as indicated, or he may qualify such answer by offering to quote some one of the definitions given by alienists, such as follow :

A disease of the brain (idiopathic or sympathetic) affecting the integrity of the mind, whether marked by intellectual or emotional disorder.—(Hack Tuke.)

A special disease, a form of alienation characterized by the accidental, unconscious, and more or less permanent disturbance of the reason.—(Régis.)

Morbid derangement, generally chronic, of the supreme cerebral centers,—the gray matter of the cerebral convolutions or the *intellectorium commune*,—giving rise to perverted feeling, defective or erroneous ideation, and discordant conduct, conjointly or separately, and more or less incapacitating the individual for his due social relations.—(Maudsley.)

Insanity is either the inability of the individual to correctly register and reproduce impressions (and conceptions based on these) in sufficient number and intensity to serve as guides to actions in harmony with the individual's age, circumstances, and surroundings, and to limit himself to the registration as subjective realities of impression transmitted by the peripheral organs of sensation, or the failure to properly coördinate such impressions and to thereon frame logical conclusions and actions, these abilities and failures being in every instance considered as excluding the ordinary influences of sleep, trance, somnambulism ; the common manifestations of the general neuroses, such as epilepsy, hysteria, and chorea ; of febrile delirium, coma, acute intoxications, intense mental preoccupation ; and the ordinary immediate effects of nervous shock and injury.—(Spitzka.)

With these few examples before us of the diversity of definition attained by careful students of psychiatry, we may well content ourselves and acknowledge that a satisfactory definition in brief form is scarcely to be devised. The writer has often qualified this by offering the following, which has at least the merit of brevity, if not of perfect adequacy :

Insanity is a manifestation in language or conduct of disease or defect of the brain.

The law assumes to offer certain definitions of insanity, from which, however, those of medicine would tend to differ, in connection with the three chief points where law and psychiatric medicine meet :

1. A criminal is insane if he does an act whose nature and quality he does not know, or if, knowing the nature and quality of his act, he does not know whether it is right or wrong.

2. A testator is insane if his mind, memory, or understanding is unsound.

3. In a lunacy inquisition the subject of the inquiry is insane if he

is incapable of managing himself and his affairs. Such are the divergent tests of insanity in law.

Classification.—What has been said of the difficulty of defining insanity is equally applicable to classification. Not all of the writers of works on psychiatry have deemed it expedient to offer a definition of insanity, but there is scarcely one who has not presented us with an original classification, or one modeled upon, or modified from, that of his favorite authority. It will be impossible as well as useless to attempt to enumerate in these pages one-half of the many classifications which have been made, held for a time, and finally abandoned with the advance of science and the accumulation of new facts in the domains of pathology and psychology. It suffices to say that there are at least forty such classifications which have been made upon etiological, psychological, symptomatological, or pathological grounds. I shall present here, simply as examples for reference, several of the latest and best classifications of the Anglo-American, German, and French schools.

The Statistical Committee of the Medico-psychological Association of Great Britain adopted the following classification for use by the medical superintendents of asylums:

1. Congenital or infantile mental deficiency—
   a. With epilepsy.
   b. Without epilepsy.
2. Epilepsy (acquired).
3. General paralysis of the insane.
4. Mania—recent, chronic, recurrent, *a potu*, puerperal, senile.
5. Melancholia—recent, chronic, recurrent, puerperal, senile.
6. Dementia—primary, secondary, senile, organic,—*i. e.*, from tumors, coarse brain disease.
7. Delusional insanity.
8. Moral insanity.

Maudsley's grouping is as follows:

I. Affective or Pathetic Insanity.

1. Maniacal perversion of the affective life (mania without delusion).
2. Melancholic depression without delusion (simple melancholia).
3. Moral alienation proper approaching this, but not reaching the degree of positive insanity in the insane temperament.

II. Ideational Insanity.

1. General.
   a. Mania.
   b. Melancholia { acute. / chronic.
2. Partial.
   a. Monomania.
   b. Melancholia.
3. Dementia { primary. / secondary.
4. General paralysis.
5. Imbecility.

Classification of the Congress of Paris (1889):

1. Mania (acute delirium).
2. Melancholia.
3. Periodical insanity (circular insanity, etc.).
4. Progressive systematized insanity.
5. Vesanic dementia.
6. Organic dementia.
7. Paralytic insanity.
8. Neurotic insanity (hypochondria, hysteria, epilepsy, etc.).
9. Toxic insanity.
10. Moral and impulsive insanity.
11. Idiocy.

The following is the classification of Régis:

I. FUNCTIONAL INSANITY.

- Generalized or symptomatic.
  - 1. Mania.
    - Subacute mania (maniacal excitation).
    - Acuta mania (typical mania).
    - Hyperacute mania (acute delirium).
    - Chronic mania.
    - Remittent or intermittent mania.
  - 2. Melancholia.
    - Subacute melancholia (melancholic depression).
    - Acute melancholia (typical melancholia).
    - Hyperacute melancholia (with stupor).
    - Chronic melancholia.
    - Remittent or intermittent melancholia.
  - 3. Insanity of double form
    - continuous.
    - intermittent.
- Partial or essential insanity.
  - Systematized progressive insanity.
    - First stage (hypochondriacal insanity).
    - Second stage (persecutory, religious, erotic, political, etc.).
    - Third stage (ambitious insanity).

II. CONSTITUTIONAL INSANITY.

- Degeneracy of evolution. (Vices of organization.)
  - Disharmony (defect of equilibrium, irregularity, eccentricity).
  - Neurasthenia (fixed ideas, impulsions, aboulias).
  - Phrenasthenias
    - delusional.
    - reasoning.
    - instinctive.
  - Monstrosities (imbecility, idiocy, cretinism, myxedema).
- Degeneracy of involution. (Disorganization.)
  - Dementia (simple dementia).

Krafft-Ebing has drawn up this scheme:

A. MENTAL DISORDERS OF THE DEVELOPED BRAIN.

I. PSYCHONEUROSES.

1. Primary curable conditions.
   - Melancholia
     - simplex.
     - attonita.
   - Mania.
     - Maniacal exaltation.
     - Acute mania.
   - Stupor, or curable dementia.
   - Wahnsinn (vesania).

2. Secondary incurable states. { Secondary monomania (Verrücktheit). / Terminal dementia { agitated. / apathetic.

II. Psychic Degeneracies.

1. Reasoning insanity.
2. Moral insanity.
3. Primary monomania (primäre Verrücktheit—persecutory, erotic, religious, ambitious).
4. With imperative conceptions.
5. Insanity from constitutional neuroses { epileptic. / hysterical. / hypochondriacal.
6. Periodical.

III. Cerebral Diseases with Marked Mental Symptoms.

1. Paralytic dementia.
2. Cerebral syphilis.
3. Chronic alcoholism.
4. Senile dementia.
5. Acute delirium.

B. ARRESTED CEREBRAL DEVELOPMENT.

1. Idiocy.
2. Cretinism.

Ziehen has given the most recent, and in many respects the best, classification of this decad :

I. Psychoses without Intellectual Defect.

A. *Simple psychoses.*

1. Affective psychoses. { Mania. / Melancholia. / Neurasthenia.
2. Intellectual psychoses. { Stupidity. / Paranoia { simple. / hallucinatory. / ideational (ideenflüchtige). / stuporous. / incoherent. / Imperative conceptions.

B. *Mingled psychoses.*

II. Psychoses with Intellectual Defect.

a. Congenital weakness (idiocy, imbecility, feeble-mindedness).
b. Acquired weakness, or dementia.
1. Paralytic dementia.
2. Senile dementia.
3. Secondary dementia (after functional psychoses).
4. Secondary dementia (after cerebral lesions, syphilis, etc.).
5. Epileptic dementia.
6. Alcoholic dementia.

To any but the expert and special student some of these classifications must, indeed, be mystifying and incomprehensible. They are forbidding to the ordinary student and to the general practitioner, and might well induce him to shun the realms of psychiatry which open

before him so uninvitingly and present such obstacles to his progress. And the fact is that they are interesting to the specialist alone because they are as yet quite impracticable from the standpoint of actual utility, as is evidenced by the employment even by the physicians of asylums, who are nothing if not practical alienists, of far simpler schemes of classification in the preparation of statistics for their annual reports and in the histories entered upon their case-books. If the asylum practitioners are compelled for practical purposes to adopt a simple method of classification, how is the novitiate in psychiatric learning to surpass them in the diagnosis and grouping of his cases? Here, for instance, is the latest classification for statistical purposes made for the asylums of New York State by the State Commission in Lunacy (1897):

Mania, acute delirious.
Mania, acute.
Mania, recurrent.
Mania, chronic.
Melancholia, acute.
Melancholia, simple.
Melancholia, chronic.
Alternating (circular) insanity.
Paranoia.
General paralysis.
Dementia, primary.
Dementia, terminal.
Epilepsy with insanity.
Idiocy.

With this direct evidence of the practical necessity of a simple grouping of cases into forms of insanity which are readily distinguished from one another, I have felt that I could not do better in my teaching than to adopt some similar arrangement. It took me a long time, after beginning a residence of several years in a large insane asylum, to crystallize the types, which were at first very confusing, into some sort of systematic division. The student or practitioner unfamiliar with insanity would, upon a visit to a large institution, probably be first struck by the peculiar shapes of heads of some of the patients. He would find, upon inquiry, that the cases with malformed crania were congenital idiots, imbeciles, or feeble-minded, and before much time had elapsed he would unconsciously make in his own mind the two great divisions of the insane into those with *diseased brains* and those with *defective brains*. The former class includes the brains which had developed normally for years and had then fallen a prey to disease; the latter the brains affected by congenital defect or by defect acquired through organic diseases in earliest childhood. In other words, he would separate them first into the *insane proper* and *idiots*. The term *idiocy* comprises three degrees of mental impairment—*profound idiocy*, moderate defect or *imbecility*, and mere weakness of mind, or *feeble-mindedness*.

Now, as the student proceeds to study the physiognomy, conduct, and speech of the cases of insanity proper, he distinguishes, ere long, states of depression (the gloomy visages and unhappy ideas of melan-

cholia) and states of exaltation (the ideomotor excitement of mania). Their histories will tell him whether they are acute, subacute, chronic, or recurrent, and whether they are puerperal, lactational, climacteric, senile, epileptic, hysterical, toxic, etc., in their origin. A very small percentage of cases presents the curious phenomena of alternating phases of mania, lucid intervals, and melancholia, giving the entity a cyclical character, and these rare examples of mental disorder are distinguished as circular insanity.

Epilepsy is found in a considerable proportion of the inmates of asylums,—sometimes conjoined with idiocy, sometimes with dementia, sometimes with symptoms of mania or melancholia, and often presenting peculiar qualities of mental disorder which render the subject of *epileptic insanity* worthy of a separate chapter. A very large group of patients in the asylum would probably impress him as being idiotic or imbecile by their speech and demeanor, and yet he would observe them to have normally shaped heads, and traces of old intelligence might be manifest. By inquiry into the histories of these numerous patients he would find that the mental enfeeblement so plainly apparent had been a sequel to a serious antecedent brain-storm, had followed upon an attack of mania or melancholia, and that the designation of this condition is accordingly *secondary* or *terminal dementia*. The term "dementia" means in psychiatry enfeeblement of the mind. There are rare cases where such enfeeblement develops *ab initio*—*e. g.*, without either of the antecedent psychoses just described, and this condition is entitled *primary dementia*.

Still another considerable group of cases becomes distinct upon further study, a syndrome identified by progressive mental enfeeblement, accompanied by progressively increasing paresis or paralysis of the muscles of speech, of the face, of deglutition, of the limbs, in fact of the whole body,—dementia paralytica, general paresis, or general paralysis of the insane,—with its phases of grandiose ideas, tremor, epileptiform and apoplectiform episodes, exaggerated or lost knee-jerks, and Argyll Robertson pupils.

He would then begin to be puzzled by the fixed delusions of persecution and grandeur, especially by the former, which he would encounter in many patients,—in some rather confused, weak, and transitory; in others systematized into a most elaborate scheme, with considerable logic and intelligence. Some study of these would lead the student to place the less elaborate persecutory ideas among the melancholiacs, alcoholics, etc., the less elaborate grandiose ideas among the chronic maniacs and general paretics, while the wonderfully elaborated delusions of grandeur and persecution of *paranoia* would lead him to recognize under this heading the remarkable mental disorder known to the Germans as "primäre Verrücktheit," to the English as chronic delusional insanity, and once familiar to us by the rather indefinite term of monomania.

I shall leave for discussion under separate headings any further subdivisions that seem to me useful. The outline just given must serve the purpose of a foundation upon which the student will rear such superstructure as his time and inclination may permit. Accordingly,

the chapters on special forms of insanity in this book will be simply arranged as follows:

1. Mania.
2. Melancholia.
3. Circular insanity.
4. Epileptic insanity.
5. Dementia (primary and secondary).
6. General paresis (paralytic dementia).
7. Paranoia.
8. Idiocy, imbecility, and feeble-mindedness.

CHAPTER II.

GENERAL ETIOLOGY OF INSANITY.

THE proportion of the insane to normal individuals may be stated to be about 1 to 300 of the population, though this proportion varies somewhat within narrow limits among different races and countries. It is probable that the intemperate use of alcohol and drugs, the spreading of syphilis, and the overstimulation in many directions of modern civilization have determined an increase difficult to estimate, but nevertheless palpable, of insanity in the present century as compared with past centuries.

The amount of such increase might easily seem to be large, on superficial examination, because of the imperfection of census-taking in the past, the accumulation of the chronic insane, and in new communities the constant upbuilding of new asylums.

Sex.—As regards sex, women and men are about equally affected, for the particular etiological factors determining insanity in the one (such as the puerperal period, the menopause, etc.) are evenly balanced by the special causes acting upon the other (struggle for existence, drunkenness, syphilis, etc.), and both sexes are about alike in their susceptibility to the two great etiological elements in alienation of the mind —heredity and mental or bodily strain.

Age.—The question of age is of great importance in a study of the etiology of insanity. While individuals are liable to mental aberration at any age, yet there are particular periods of life characterized by special vulnerability. In general, it may be said that this vulnerability is greatest in women between the ages of twenty-five and thirty-five, and in men between twenty and fifty, for it is at middle age that we find the maximum accumulation of etiological factors. But there are physiological epochs that influence markedly the line of psychic morbidity, and these are the periods of puberty and adolescence (fourteen to twenty years), that of genital involution in women (forty-five), and that of senile involution (sixty to seventy years).

But the chief factors in the causation of insanity may be summed up

in two words—heredity and strain. The former is responsible for instability of the nervous system, the latter is multiform in character, comprising all of the stresses, physical and mental, direct and indirect, autochthonous and environmental, which may undermine the nervous constitution and bring it to its point of collapse.

Heredity.—In determining the factor of heredity we must not be content with ascertaining the existence of psychoses in the ascendants, but must seek, by careful interrogation of various members of the family, for some of the hereditary equivalents, such as epilepsy, chorea, hysteria, neurasthenia, somnambulism, migraine, organic diseases of the central nervous system, criminal tendencies, eccentricities of character, drunkenness, etc., for these equivalents are interchangeable from one generation to another, and are simply evidences of instability of the nervous system. It is the unstable nervous organization that is inherited, not a particular neurosis or psychosis, and it must be our aim in the investigation of the progenitors to discover the evidence of this.

That the statistics of insanity as regards heredity are often faultily gathered is too well known. In the first place, the recorder of the history of a patient frequently neglects to extend his inquiry far enough to include all of the transmissible psychoneuroses, and, in the second, the relatives are prone to conceal any supposed hereditary taint in the family. Here, for example, is a table prepared by the Lunacy Commissioners, showing the causes of insanity in 136,478 admissions to asylums in England and Wales, in which I find the item "hereditary influence ascertained" 20.5 per cent. Surely, so small a figure does not represent the true proportion of heredity as an etiological factor!

It will take many decads of much more careful compilation of histories to establish the actual ratio, but we shall attain nearer to the facts year by year.

No one has better formulated the principles of heredity in relation to insanity than Mercier,[1] who points out, among other things, that, besides the importance of the direct transmission of an unstable nervous system, there is another law of heredity, which is known as the law of sanguinity. Two parents may be perfectly stable and have normal organisms, and yet produce offspring with unstable and abnormal nervous constitutions, because of the unsuitability of the sexual elements of the parents to each other. The perfect organization of the progeny is the result of three factors—the quality of the germ (which brings matter), the quality of the sperm (which brings force), and the suitability of the one to the other.

The laws of heredity as they relate to insanity may be summarized briefly as follows:

1. The child tends to inherit every attribute of both parents.
2. Contradictory attributes can not be inherited from both parents.
3. The child may inherit the attributes of either parent solely.
4. It may inherit the qualities of one parent in some respects and of the other in other respects.

[1] "Sanity and Insanity."

5. It may inherit the father's attributes for one period of existence and the mother's for another.

6. Some attributes have the quality of prepotency, or the tendency to push aside or overrule other attributes.

7. Attributes which are similar in both parents tend to become prepotent, giving rise to convergent or cumulative heredity.

8. Attributes may be transmitted in latent form from one generation to another, to reappear in a third or fourth or still more remote generation—a phenomenon termed "reversion."

9. Attributes tend to appear in the progeny about the same time of life at which they became manifest in the parents.

10. Attributes of the father tend to be inherited by the sons and of the mother by the daughters.

A study of the above laws will explain many of the puzzling features of psychopathic heredity,—why, for instance often only a few of the children of a neurotic parent suffer from neuroses or psychoses, and why psychoneuroses may develop in the progeny of healthy parents (latency). It must be remembered, too, that there is a variation in the degree of hereditary taint originated by the several heritable equivalents. Thus, simple neurasthenia, eccentricity of character, and a puerperal or senile psychosis are not so serious a heritage as epilepsy, chronic alcoholism, paranoia, and imbecility. The taint in a family is greater the larger the number of members and branches afflicted. When the degree of hereditary taint is marked, the psychoses which may develop tend to be modified from the ordinary types of such psychoses, and this deviation is termed hereditary degenerative modification,—or, in short, hereditary degeneracy,—while the insanity evolved is designated as a degenerative psychosis. The particular degenerative psychoses are such forms as idiocy, imbecility, feeble-mindedness, periodical and circular insanity, hysterical insanity, acute simple paranoia, polymorphic insanity, etc. A polymorphic course is particularly characteristic of psychic degeneracy, so that sometimes a perfect chain of psychopathic conditions and psychoses will be manifested throughout the life of the degenerate.

The polymorphism of hereditary transmission sometimes manifests itself in what is known as progressive hereditary degeneracy. For example, drunkenness in one generation may lead to simple psychoses in the next, to complex degenerative psychoses, epilepsy, etc., in the third generation, and finally, in the fourth, to idiocy, sterility, and the annihilation of the stock.

The indications of degeneracy in an individual are termed the stigmata of degeneration, or stigmata hereditatis. They may be defined as anatomical or functional deviations from the normal, which in themselves are usually of little importance as regards the existence of an organism, but are characteristic of a marked or latent neuropathic disposition. Much study has of late years been devoted to these indices by many investigators, particularly in their relation to insanity, idiocy, and criminal anthropology, and it behooves all who have to do with the development and care of the human body in any particular—and this

refers especially to men of the medical and allied professions—to familiarize themselves with these signs of degeneration, in so far as they concern their own special provinces of work. These stigmata are vices of functional and organic evolution. The deviations from the normal may be in the way of excesses or arrest of development. They must be distinguished from the deficiencies or deformities produced by accidents at birth or by disease. I have said that these stigmata are anatomical and functional, but it is more convenient to divide the functional group into physiological and psychic classes. It is the latter which we are more apt to observe in our social relations with degenerate individuals. The psychic stigmata are always characterized by want of balance or lack of proportion between certain undeveloped or excessively developed faculties and other faculties which are normal. Defect of moral sense, of attention, of memory, will, judgment, or unbalanced excess of musical or mathematical aptitudes may be cited as instances of psychic stigmata. Hence the three following divisions may be made of all the degenerative indices: (1) Anatomical stigmata; (2) physiological stigmata; (3) psychic stigmata.

Anatomical Stigmata.

- Cranial anomalies.
- Facial asymmetry.
- Deformities of the palate.
- Dental anomalies.
- Anomalies of the tongue and lips.
- Anomalies of the nose.
- Anomalies of the eye:
  - Flecks on the iris; strabismus; chromatic asymmetry of the iris; narrow palpebral fissures.
  - Albinism.
  - Congenital cataracts.
  - Microphthalmos.
  - Pigmentary retinitis.
  - Muscular insufficiency.
- Anomalies of the ear.
- Anomalies of the limbs:
  - Polydactyly.
  - Syndactyly.
  - Ectrodactyly.
  - Symelus.
  - Ectromelus.
  - Phocomelus.
  - Excessive length of the arms.
- Anomalies of the body in general:
  - Herniæ.
  - Malformation of the breasts, thorax.
  - Dwarfishness.
  - Giantism.
  - Infantilism.
  - Feminism.
  - Masculinism.
  - Spina bifida.
- Anomalies of the genital organs.
- Anomalies of the skin.
  - Polysarcia.
  - Hypertrichosis.
  - Absence of hair.
  - Premature grayness.

PHYSIOLOGICAL STIGMATA.

- Anomalies of motor function :
  - Retardation of learning to walk.
  - Tics.
  - Tremors.
  - Epilepsy.
  - Nystagmus.
- Anomalies of sensory function :
  - Deaf-mutism.
  - Neuralgia.
  - Migraine.
  - Hyperesthesia.
  - Anesthesia.
  - Blindness.
  - Myopia.
  - Hypermetropia.
  - Astigmatism.
  - Daltonism.
  - Hemeralopia.
  - Concentric limitation of the visual field.
- Anomalies of speech :
  - Mutism.
  - Defective speech.
  - Stammering.
  - Stuttering.
- Anomalies of genito urinary function :
  - Sexual irritability.
  - Impotence.
  - Sterility.
  - Urinary incontinence.
- Anomalies of instinct or appetite :
  - Uncontrollable appetite (food, liquor, drugs).
  - Merycism.
- Diminished resistance against external influences and diseases.
- Retardation of puberty.

PSYCHIC STIGMATA.

- Insanity.
- Idiocy.
- Imbecility.
- Feeble-mindedness.
- Pavor nocturnus.
- Precocity ; one-sided talents ; disequilibration.
- Eccentricity.
- Moral delinquency.
- Sexual perversion.

Having made this attempt to classify the various stigmata, we may now proceed to examine them in some detail :[1]

Cranial Anomalies.—The most important features to be noted in connection with the head are asymmetry and a variety of deformities.

[1] For further information on these subjects the reader is referred to the following articles by the writer :

"Some of the Principles of Craniometry," "N. Y. Med. Record," June, 1888.

"Cranial Measurements in Twenty Cases of Infantile Cerebral Hemiplegia" (with E. D. Fisher), "N. Y. Med. Journal," April 6, 1889.

"Craniometry and Cephalometry in Relation to Idiocy and Imbecility," "Amer. Jour. Insanity," July, 1895.

"Deformities of the Hard Palate in Degenerates," "Internat. Dental Journal," December, 1895.

"The Stigmata of Degeneration," "State Hospitals Bulletin," July, 1896.

It is necessary to an understanding of these stigmata to go over briefly a few facts of craniometry and cephalometry.

A score or more of distinguished anthropologists of the present century have been trying to discover racial distinction in human skulls; but the fact is that there are not so many characteristics of race in the cranium as in other parts of the body, and, accordingly, there are still wide differences of opinion as regards a scientific craniological classification. Races have been mingling so many thousands of years that cranial dissimilarities are the rule among them, even in tribes, and to some extent in families. These diversities of form have been designated as dolichocephalic, mesocephalic, and brachycephalic—words which merely convey an idea of the relation of the length to the breadth of the skull when viewed from above. The anteroposterior is to the biparietal diameter as 100 is to x, is the formula for determining this "cephalic index." All length-breadth indices below 78 are considered dolichocephalic; from 78 to 80, mesocephalic; and above 80, brachycephalic. We may assume that the physiological limits of this index are 70 to 90. This is based upon thousands of measurements of skulls

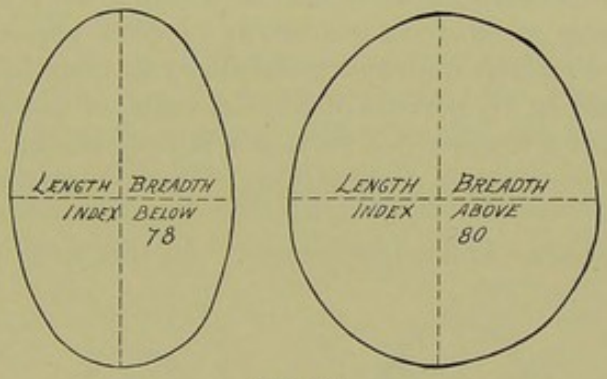


Fig. 236.

by various investigators. Any excess or diminution of these figures must hence be regarded as pathological (Fig. 236).

But while one skull may be narrower or broader than another, there is compensation in other diameters. The dolichocephalic has a greater vertical diameter, for instance, than the brachycephalic skull.

Besides these characteristics, something must be said regarding the physiological asymmetry of the skull. The fact that the arms and hands are not symmetrical on the two sides of the body, either in size or function; that the legs and feet are not symmetrical; that the left cerebral hemisphere is larger and more complicated than the right, would naturally lead us to anticipate some slight asymmetry of the two sides of the skull, and the facts of observation support us in the statement that asymmetry is the rule and perfect symmetry the exception. More than a thousand postmortem examinations, the examination of several hundred heads, and an inspection of some collections of skulls, such as that of Blumenbach, where I have particularly noted this point, together with the testimony of others, justify me in this assumption.

Asymmetry sometimes reaches extraordinary proportions,—often with quite a normal state of brain function, often with marked psychopathic changes. Outside of purely physiological asymmetry, we have that depending upon defective development and disease. One of the first of nature's constructive principles in fashioning the skull is the struggle of its contents for volume. Hence, as long ago pointed out by Virchow, premature synostosis of any cranial suture will lead to compensatory deformity. So, too, will arrest of development in any center of

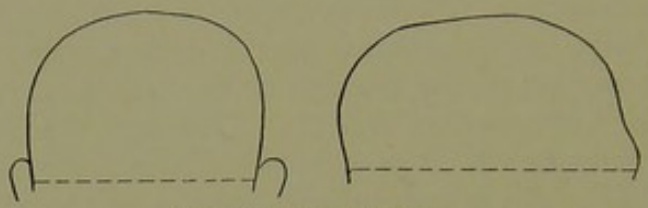


Fig. 237.—Chemocephalus.

ossification, or a unilateral aplasia or hyperplasia of the skull bones, or of the contents of the skull.

Aside from the deformities of the head which are congenital in character, the diseases which most commonly produce cephalic deformation in early life are rachitis and hydrocephalus ; in later life, tumors, exostoses, etc. ; while at all periods of life the shape of the skull is menaced by injuries, from a forceps delivery to a falling brick. The following are some of the commoner designations of well-known cranial deformities :

Chemocephalus is flat-headedness. In this there is flatness at the

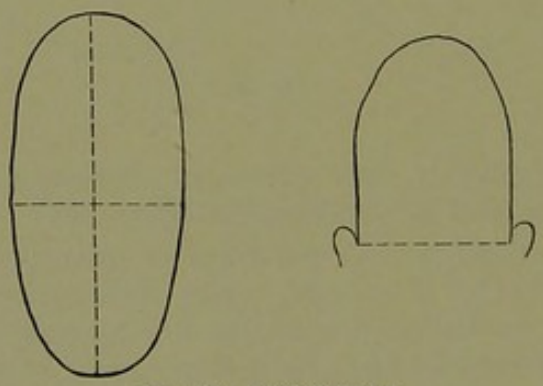


Fig. 238.—Leptocephalus.

top of the head. The condition is also called **platicephalus** (Fig. 237).

Leptocephalus.—Early synostosis of the frontal and sphenoid produces leptocephalus, or narrow-headedness (Fig. 238).

Macrocephalus is a large head, usually due to hydrocephalus.

Microcephalus is a small head, due either to aplasia of the brain or premature synostosis of the sutures (rarely the latter).

Oxycephalus, or steeple-shaped skull, is due to synostosis of the parietal with the occipital and temporal bones, with compensatory de-

velopment in the region of the bregma. Another name for this is *acrocephalus* (Fig. 239).

Plagiocephalus, or oblique deformity of the head, is due to unilateral synostosis of the frontal with one of the parietal bones (Fig. 240).

Scaphocephalus is probably caused either by too early union of the sagittal suture or by the development of both parietal bones from one center. The top of the head is keel-shaped (Fig. 241).

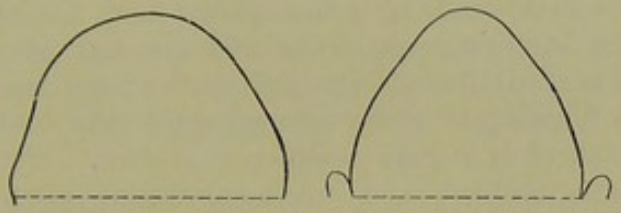


Fig. 239.—Oxycephalus.

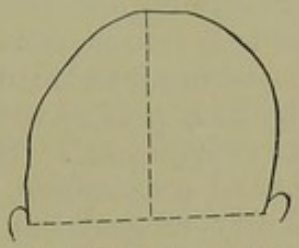


Fig. 240.—Plagiocephalus.

Trigonocephalus.—Premature union of the frontal suture, resulting in very narrow forehead and great width behind, giving rise to the term trigonocephalus (Fig. 242).

The two systems of measurement—the craniometrical and the cephalometrical—differ but slightly from each other, the former, of course, being the more exact, since every portion of the naked skull is attainable.

I would recommend the following series of measurements to be

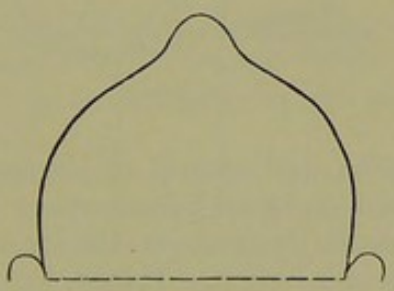


Fig. 241.—Scaphocephalus.

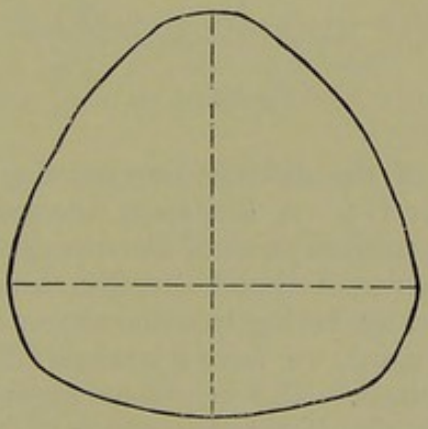


Fig. 242.—Trigonocephalus.

taken—eleven in number—in order to form a just idea of the capacity, shape, and symmetry of any head (Figs. 243 and 244): (1) The circumference; (2) the naso-occipital arc (N to T); (3) the nasobregmatic arc (N to β); (4) the bregmatolambdoid arc (β to A); (5) the binauricular arc; (6) the anteroposterior diameter (S to O); (7) the greatest transverse diameter (length-breadth index); (8) the binauricular diameter; (9) the two auriculobregmatic radii; (10) the facial length; (11) the empirical greatest height (B to β).

In addition to acquiring these mathematical data, cephaloscopic drawings are invaluable as exhibiting deformity clearly to the eye. Hence, the horizontal circumference, naso-occipital curve, and binauricular curve should be taken with a strip of lead, or, what is better, with the instrument devised by Luys (on the principle of the hatter's conformateurs), and the curves projected on paper.

Dolichocephalic heads, as a rule, have narrow, and brachycephalic have broad, faces. Something should here be said concerning prognathism, of which there are several forms. The best method of determining it is to measure the angle made by a line drawn from the nasal root to the junction of the inferior nasal spine and alveolar process (Fig. 244, N to x) with a vertical line dropped from the nasal root to Broca's horizontal. It is found that every normal skull exhibits this subnasal prognathism, but there is a wide variation in degree. Extraordinary prognathism, orthognathism, and opisthognathism—meaning extreme projection, straightness, or inclination backward of the subnasal line—are pathological.

The empirical greatest height of the head is an approximate measure-

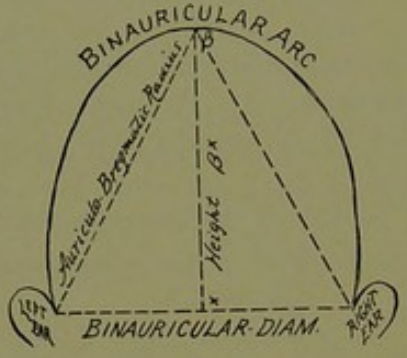


Fig. 243.

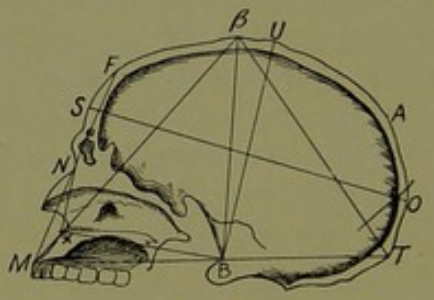


Fig. 244.

ment of the distance between the basion and vertex of the skull (B to β, or U). A line from the external occipital protuberance to the lowest median point of the superior maxilla, just above the incisors (T to M), passes almost directly through the basion. Hence, in cephalometry, by taking this diameter and the radii from each extremity to the bregma, we have a triangle (M, β, T) whose height (B, β) is easily ascertained. The height averages 13.3 cm. in men, 12.3 in women, and the physiological variation is from 11.5 to 15.

The only instruments necessary for obtaining the data just described are a pair of calipers, the tape-line, and a strip of sheet-lead two feet long by $\frac{1}{2}$ or $\frac{3}{4}$ of an inch wide. Benedikt's calipers (manufactured by Wolters in Vienna), which are here illustrated, are to be recommended for their exactness (Fig. 245), as are also those that I have had made for my own use (Fig. 246).

Excessive prognathism is found among criminals, in microcephali, and in cases of hemi- and paraplegia spastica infantilis. Skulls known as crania progenæa have considerable pathological significance. In these, lower teeth project beyond the upper, and the inferior maxillary

angle is obtuse, due, probably, to aplasia of the upper or hyperplasia of the lower maxilla.

The demonstration of the empirical greatest height is often quite valuable as an index of degenerative and neuropathic types. The following are some general points which should be considered in the examination of these cases :

A skull below the normal type in volume belongs to an abnormal individual.

Undertypical measurements of the head should always lead us to entertain the suspicion of defective cerebration.

Abnormal smallness of any part of the skull permits the conclusion that the part of the brain in its neighborhood is imperfectly developed.

Excessive development of the head has a double signification. It is

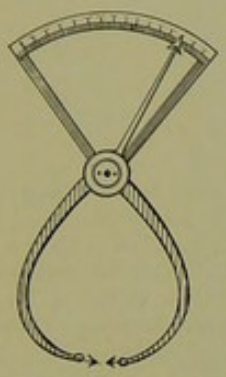


Fig. 245.—Benedikt's calipers.

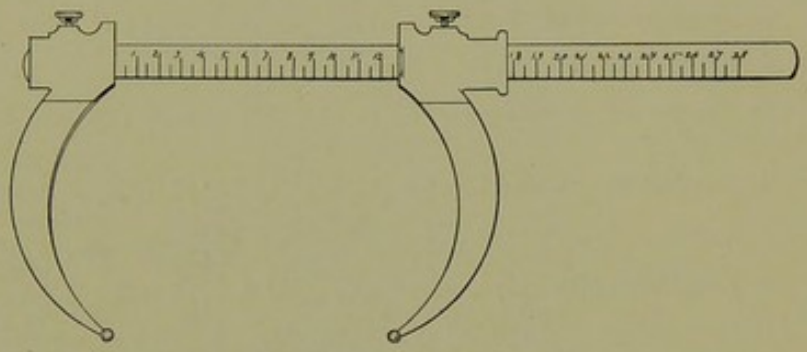


Fig. 246.—Author's calipers.

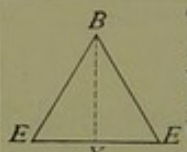
always pathological, but may mean abnormality of brain or successful compensation. Wormian bones are also doubly significant. They either represent a pathological process or a successful effort of nature in repair.

Hemiplegia spastica infantilis, epilepsy, and intellectual or ethic weakness often exhibit unilateral aplasia of the skull.

The skull is representative of the brain only during the years of its development, and it must be remembered that psychopathic deterioration often has its inception subsequent to the completion of the process, when no impression can be made upon its bony walls.

I have prepared a table of the measurements recommended, showing the averages in adults, male and female, together with the physiological variation, excesses above or below which are significant of morbidity. It is based upon the examination of some hundreds of skulls and heads, and upon statistics given by various authorities who have made especial study of this department of anthropometry. Hence it may be depended upon as a fair estimate of the dimensions of the head in most of the Caucasian races. The table is as follows :

TABLE OF CRANIOMETRICAL MEASUREMENTS.

	Average in Adult in Centimeters.		Physiological Variation.	Remarks.
	Males.	Females.		
1. Circumference, ...	52	50	48.5–57.4	Roughly approximated, the volume is to the circumference as 1350 c.c. is to 50 cm.
2. Volume, ...	1500	1300	1201–1751	
3. Naso-occipital arc, ...	32	31	28–38	In figure, *N* to *T*.
4. Nasobregmatic arc, . .	12.5	12	10.9–14.9	*N* to β.
5. Bregmatolambdoid arc, .	12.5	11.9	9.1–14.4	β to *A*.
6. Binauricular arc, . . .	32	31	28.4–35	
7. Anteroposterior diameter,	17.7	17.2	16.5–19	*S* to *O*.
8. Greatest transverse diameter	14.6	14	13–16.5	The formula for the length-breadth index is: Length : Breadth :: 100 : *x*. An index below 78 is dolichocephalic; 78 to 80, mesocephalic; above 80, brachycephalic.
9. Length-breadth index, . .	82.2	83.8	76.1–87	
10. Binauricular diameter, . .	12.4	11.9	10.9–13.9	 The height *B-X* of the triangle *E*, *B*, *E* formed by the auriculobregmatic radii and the binauricular diameter, averages 11.17 with a variation from 10 to 12.65.
11. Auriculobregmatic radii, .				
12. Facial length, ...	12.37	—	10.5–14.4	From root of nose, *N*, to lowest part of chin.
13. Empirical greatest height,	13.3	12.3	11.5–15	The empirical greatest height, *B*, β, is obtained by measuring the sides of the triangle *M*, β, *T*.

These measurements are those of the adult human skull. As the hair and scalp superadd about 3 cm., about 6 per cent. should be deducted in the head measurements Nos. 1, 3, and 6 to obtain those of the skull. In taking the diameters Nos. 7 and 8, deduct 1 cm. (the scalp averaging 5 mm. in thickness), and from the shorter radii, such as Nos. 10 and 11, subtract but 7 mm.

Facial Asymmetry.—Inequality of the two sides of the face—when congenital and not due to some such disease as hemiatrophy—is to be looked upon as a stigma of degeneration. In the same category may be grouped various irregularities, and such conditions as excessive prognathism or retrognathism. Great prominence or unequal promi-

nence of the malar bones is to be observed, and also asymmetry of the orbits (Fig. 247).

Deformities of the Palate.—In connection with the soft palate, bifurcation of the uvula may be mentioned. As regards the hard palate, I have dwelt upon its deformities at some length in an article in the "International Dental Journal" (December, 1895), and the facts there brought forward may be recapitulated as follows:

While the palate occupies but a small place in this great category of hereditary stigmata of all kinds, it is one of the anatomical group, and this group is for many reasons the one of greatest importance. In this

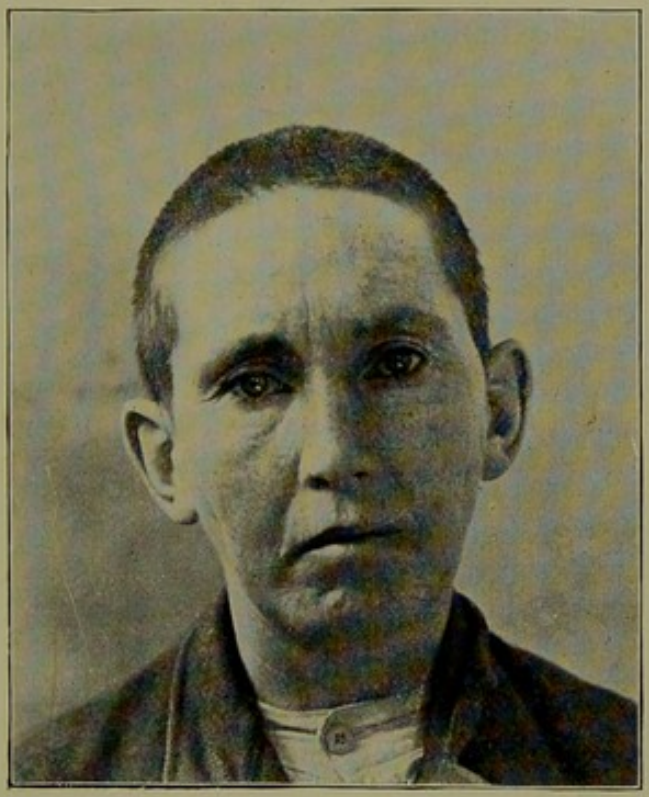


Fig. 247.—Male epileptic, aged forty years, with glabrous face and chin and facial asymmetry.

group, too, it occupies a distinctive place as being among the most striking, frequent, and significant of the anomalies.

The arch of the hard palate presents considerable variation within strictly normal anatomical limits. A large, wide, moderately high vault is what may be called a normal standard. It means the highest evolution, judging from the fact that the mouth-cavity increases in capacity as we ascend the vertebrate series. Deviations from that standard are not at all infrequent, and yet such deviations may be normal. Thus, the palate may be low and broad, or it may be high and narrow; it may be short or long in its anteroposterior diameter; it may be ridged unduly along the palatine sutures, or it may present marked rugosities on its surface, especially in the anterior region; yet these variations are normal. Probably we may look upon these pecu-

liarities as a species of compensatory development. Just as in a study of heads we find some very long and low, and others short and round and high, and recognize the fact that the shortness in one dimension is compensated for by a corresponding increase in another, so we may regard variation in palatine diameters.

The pathological palate has not been studied as much as it deserves to be. Save occasional and casual references to the "Gothic" palate in literature, and one or two papers upon the "torus palatinus," very little has been written upon the subject. In my paper, previously referred to, I have attempted to classify such pathological palates as could be justly looked upon as indicative of degeneracy. The word Gothic having been so long in use, and the hard palate being much like an arch or roof,[1] I have followed architectural nomenclature in the classification offered.

PATHOLOGICAL PALATES:

1. Palate with Gothic arch (Fig. 248).
2. Palate with horseshoe arch (Fig. 249).
3. The dome-shaped palate (Fig. 250).
4. The flat-roofed palate (Fig. 251).
5. The hip-roofed palate (Fig. 252).
6. The asymmetrical palate (Fig. 253).
7. The torus palatinus (Fig. 254).

The seven varieties named are to be looked upon as types merely. Each type will be found to present variations and combinations with other forms. Thus, the Gothic arch may have a low or high pitch and be short or long. The horseshoe arch (a familiar one in Moorish architecture) is always easily distinguished, but, owing to its conformation, a cast can not well be taken of it to show it in a perfect outline. The dome-shaped palate may be high or low, may be combined with asymmetry or torus. The presence of a torus in the Gothic variety is apt to destroy the purely Gothic form, and may cause it to resemble the flat-roofed palate. Under the heading of flat-roofed palate I should include all such palates as are nearly horizontal in outline, as well as those with inclined-roof sides but flattened gable. In the hip-roofed palate we have the sloping sides as usual, but also a marked pitch of the palate roof in front and behind; occasionally one may meet with a palate of this kind with so remarkable a pitch from before backward that it is almost like a Gothic roof turned about so that the gable runs transversely.

Asymmetry in the palate is commonly observed in many of the previously described forms, but occasionally is the only noteworthy peculiarity. It is usual to find asymmetry of the face and skull in cases with an asymmetrical palate. The torus palatinus (Latin *torus*, swelling) was first mentioned by Chassaignac as a mediopalatine exostosis. It is a projecting ridge or swelling along the palatine suture, sometimes in its whole length, sometimes in only a portion of its course. It is always congenital. It varies considerably in its shape and size, so

[1] "There is some confusion in literature of the roof of the mouth, or hard palate, referred to in this paper, with the dental arch, which is quite another thing."

that as many as five or six different species of torus are recognized. It may be wedge-shaped, narrow, broad, very prominent, or irregular. I have said nothing about cleft-palate, for I am not sure that it may be

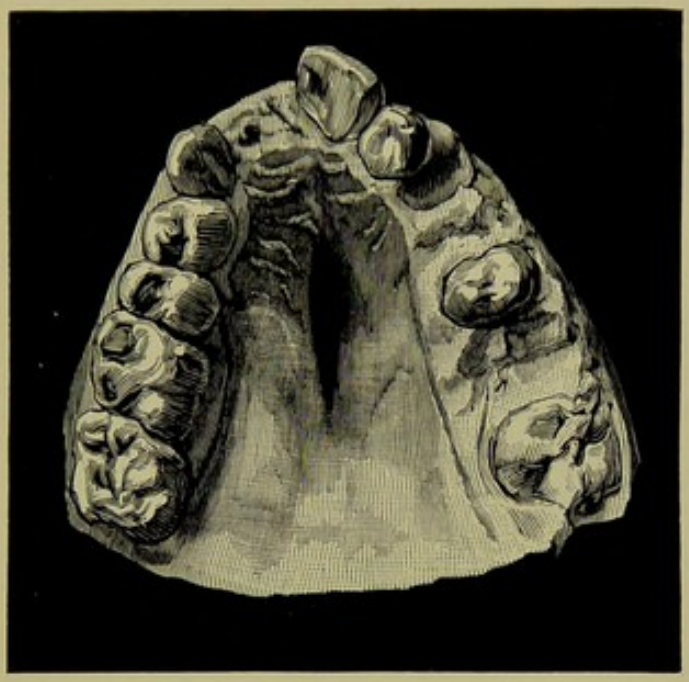


Fig. 248.—Palate with Gothic arch.

Fig. 249.—Palate with horseshoe arch.

classed among the well-marked stigmata of degeneration. I have found but two or three cleft-palates among the 450 idiots and imbeciles on Randall's Island, while a number of cases of this kind with which I

have come in contact in my professional life were very far from degenerates. However, it would seem that there is great need of a faithful study of a large number of cases of cleft-palate in relation to the ques-

Fig. 250.—The dome-shaped palate.

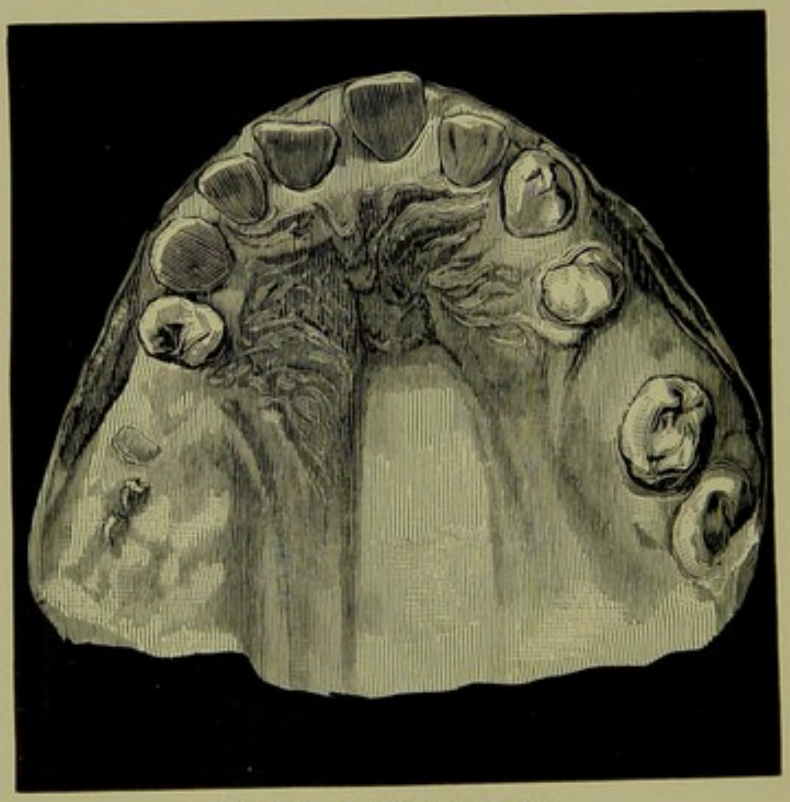


Fig. 251.—The flat-roofed palate.

tion of degeneracy. The deformed palate is, to my mind, one of the chief anatomical stigmata of degeneration.

It is true that, from this single indication, it would not be strictly

scientific to adjudge an individual a degenerate. Occasionally, perhaps, a case presents itself where this anatomical stigma alone would suffice to insure a diagnosis of this nature; but usually other stigmata coexist, such as cranial anomalies, deformities of the ear, and the like. The

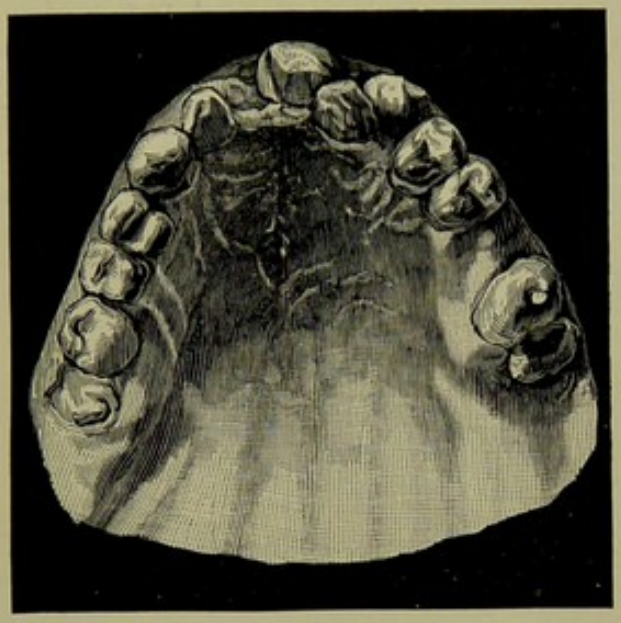


Fig. 252.—The hip-roofed palate.

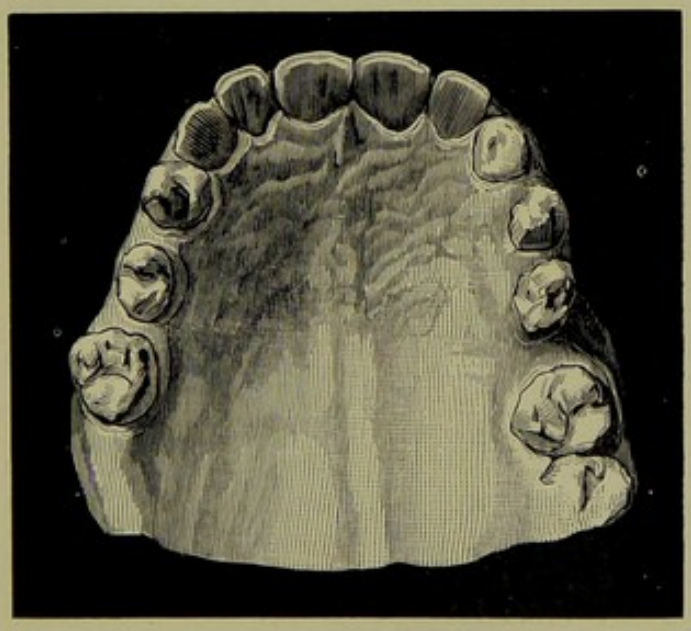


Fig. 253.—The asymmetrical palate.

frequency of the pathological palate among marked degenerates, such as the insane, idiots, and epileptics, has been testified to by many investigators. Thus, Talbot reported 43 per cent. of abnormal palates in 1605 inmates in institutions for the feeble-minded. Ireland makes it nearer 50 per cent. Charon, a later writer than these, found abnor-

mal palates in 10 per cent. of apparently normal persons, in 82 per cent. of idiots and feeble-minded, in 76 per cent. of epileptics, in 80 per cent. of cases of insanity in general, in 70 per cent. of the hysterical insane, and in 35 per cent. of cases of general paralysis. Näcke has studied particularly the torus palatinus in 1449 individuals, normal and psychopathic; he found it present in 23.9 per cent. of psychopathic women (insane, epileptic, idiot, and criminal), 32.9 per cent. of epileptic women, 34.4 per cent. of criminal women, 22.7 per cent. of normal women. The percentages were smaller in men than in women. A narrow torus is more common than a broad one.

Stieda examined 1500 skulls for the torus from an anthropological point of view. The skulls were of Prussians, Armenians, Africans, Frenchmen, Russians, and Asiatics. He decided that it has no anthropological significance; gives no racial distinction. While the torus is

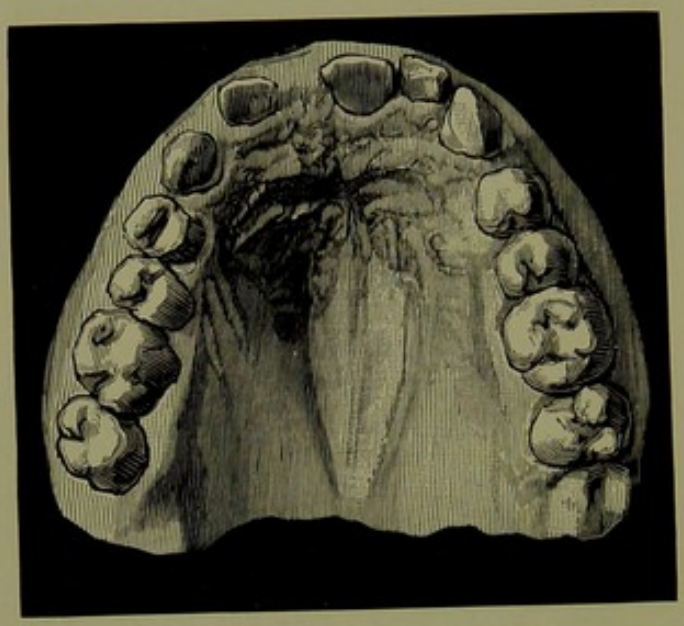


Fig. 254.—Torus palatinus (broad, wide torus).

undoubtedly of value as an index of degeneration, particularly where it is well marked, it probably has less importance in this respect than some of the other forms of pathological palate.

Dental Anomalies.—Among anomalies of the teeth are macrodontism, microdontism, projecting teeth, badly placed or misplaced teeth, double row of teeth, or teeth which are striated transversely or longitudinally. Caries of the teeth and Hutchinson's teeth are due to neglect or disease. The latter, however, may often be considered as a stigma of degeneration. Then there is a retardation of the first and second dentition.

Anomalies of the Tongue and Lips.—A very large tongue (macroglossus) is not infrequently observed among the lowest classes of degenerates, as in idiocy. Sometimes there is microglossus, asymmetry of the two halves, or bifidity of the point. Harelip is somewhat more common than cleft-palate, but, like the latter, its exact standing as a

degenerative stigma is not fully determined. Undue swelling or puffiness of the lips is noteworthy.

Anomalies of the Nose.—Marked deviation of the nose to one side or the other should be noted. Taken alone it may possess little significance, but in conjunction with other stigmata it is of value. The nose may be absent, or present defect of osseous development (*nasus aduncus*) or atresia of the nasal fossæ.

Anomalies of the Eye.—The pathological conditions of the eye have been placed in two groups in the foregoing classification, since some are anatomical and some physiological. To enumerate them altogether, they are as follows:

Anatomical.	Physiological.
Flecks on the iris.	Blindness.
Strabismus.	Myopia.
Chromatic asymmetry of the iris.	Hypermetropia.
Narrow palpebral fissures.	Astigmatism.
Albinism.	Daltonism.
Congenital cataracts.	Hemeralopia.
Pigmentary retinitis.	Concentric limitation of the visual field.
Microphthalmos.	Nystagmus.
	Muscular insufficiency.

It is true that any one or two or more of these conditions present do not certainly indicate degeneracy, but they are significant in connection with other abnormal states, and all of them are more frequently observed in degenerate individuals, especially the lower orders, than in normal persons. In idiots, convergent strabismus, due to defect of refraction and in conjunction with hypermetropia, is very common. Muscular insufficiency and nystagmus (lateral or rotatory) are also often met with in this class of cases. In paralytic and other idiots and imbeciles homonymous hemianopsia is sometimes met with.

Anomalies of the Ear.—Deformities of the ear have been deservedly well studied, for as stigmata of degeneration they take high rank, like anomalies of the hard palate, in the anatomical group. Morel, Stahl, Wildermuth, Binder, and, more recently, Schwalbe, have given us especially good studies of these conditions. From their writings and my own studies, the following classification (following Binder) into twenty-two varieties may be made:

I. Abnormally implanted ears; they project too far or lie too closely, are placed too high or too low, too far forward or too far backward on the head.

II. Excessively large ears: (1) absolutely too large; (2) relatively too large in small or microcephalic individuals.

III. Ears which are too small.

IV. Too marked conchoidal shape of the ear. The details of the ear (anthelix and crura, etc.) are but slightly marked, while the helix outlines the ear like the rim of a funnel.

V. Ears which have a general ugly shape. The breadth of the upper part may exceed that of the lower, and vice versâ; excessive length; ears without lobules; unusually short ears.

VI. Ear not uniform in width; usually a long ear with one or more constrictions in its breadth.

VII. The Blainville ear; asymmetry of various kinds of the two ears. In most cases the asymmetry is due to an anomaly of the left ear.

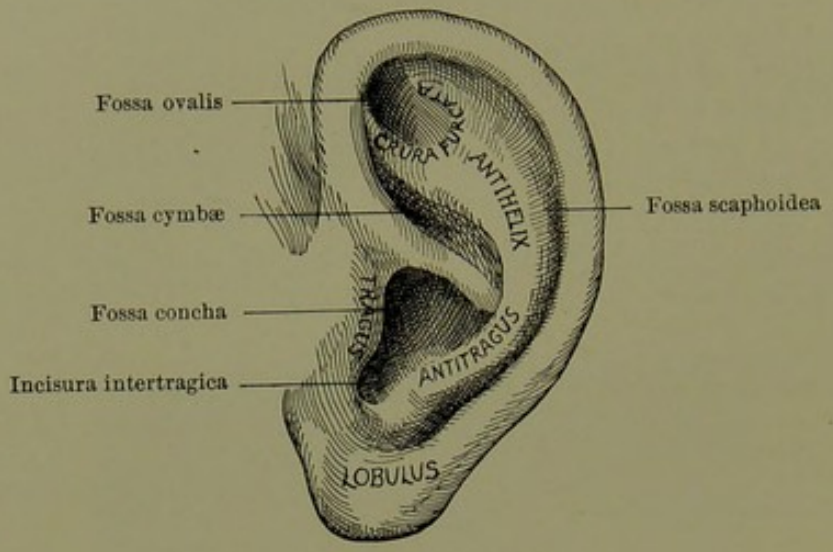


Fig. 255.—Normal ear.

VIII. The ear without lobule; there are usually other deformities of this ear besides the absence of lobule, such as too large a concha, prominence of the anthelix, etc.

IX. The ear with adherent lobule; the lobule is enlarged, adherent, and inclines downward toward the cheek.

Fig. 256.—Blainville ear; also excessive length of ears.

Fig. 257.—Morel ears.

X. The Stahl ear, No. 1.[1] A series of anomalies of the helix. The helix is broad, like a band, and coalesces with the cartilages

[1] See "Zeitschrift für Psych.," vol. xvi.

of the crura furcata. The fossa ovalis and fossa scaphoidea are scarcely to be seen. The lower half of the helix is obliterated. There are occasionally slight variations from this type.

XI. The Darwin ear; helix interrupted where its transverse portion passes into the descending, and at this point is a projection of the rim above and outward, like the pointed ear of lower animals.

XII. The Wildermuth ear.[1] The anthelix projects so far as to form the most prominent part of the auricle.

XIII. The ear without anthelix or crura furcata.

XIV. The Stahl ear, No. 2. Multiplication of the divisions of the crura furcata, so that there are three instead of two crura.

XV. Wildermuth's Aztec ear. Lobule wanting; the whole ear seems pushed forward and downward; the crus superius of the anthelix coalesces with the helix, while its crus anterius is scarcely perceptible.

XVI. The Stahl ear, No. 3. Only the crus anterius of the crura furcata is present, while the auricle seems divided into two halves by a ridge from the antitragus.

XVII. The ear with double helix.

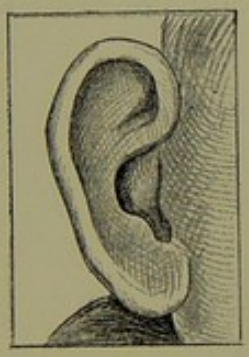


Fig. 258.—Stahl ear, No. 1.

Fig. 259.—Darwin ear.

XVIII. The ear with too large or too small a concha.

XIX. The ear with continuous fossa scaphoidea. The fossa passes down into the lobe.

XX. The Morel ear. A form marked by abnormal development of the helix, anthelix, fossa scaphoidea, and crura furcata, so that the folds of the ear seem obliterated, and the ear is smooth, larger than usual, often prominent, and with thin edge.

XXI. Ears misshapen by abnormal cartilage development. Here belong all irregular cartilaginous growths and thickenings except those caused by hematoma of the ear.

XXII. Various peculiarities, difficult to classify, are included here, such as abnormalities of the semilunar incisure of the tragus and of the meatus, coloboma of the lobule, hairiness of the different parts of the auricle, accessory ears, clefts, etc.

[1] "Wurt. Corresp.-Blatt," 1886, No. 40.

The most important malformations of the ear—those that may be regarded as belonging to the stigmata of degeneration, and those, too, which are striking and plain to the eye—are to be summarized as follows:

The deep position of the crus anterius.
Marked prominence of the anthelix.
Excessive broadening of the ear.
Stunted development of or absence of the helix.
Trifurcation of the anthelix.
Widening of the fossa scaphoidea.
Absence of the crus superius.
Complete absence of lobule.
Asymmetry of the two ears.
Excessive enlargement or diminution of the concha.
Excessive conchoidal structure of the ear.

Reference is occasionally made in literature to the Cagot ear. The Cagot is a species of cretin in the French and Spanish Pyrenees, in which one of the chief physical deformities is absence of the lobule of the ear.

Binder states that the adherent lobule exists in almost one-third of normal persons, and in the photographs of several hundred distinguished persons 15 per cent. had abnormal lobules. At the same time more

Fig. 260.—Excessive length of ears; facial asymmetry.

than twice as many adherent lobules are found in degenerates as in normal individuals.

Now, with regard to statistics of malformed ears in degenerate individuals, Wildermuth noted this condition in 41 per cent. of 142 idiots. Binder found 64 per cent. of degenerate ears in 354 insane persons. It is to be remarked, however, that Binder was more careful in his examinations, and by long practice had acquired more expert knowledge than Wildermuth. Fränkel observed degenerate ears in 29 cases out of 32 with cranium proganæum.

Knecht found 20 per cent. of degenerate ears among 1274 criminals, 27 per cent. among 48 epileptics, and 32 per cent. among 84 insane.

Binder noted degenerate ears in 33 persons outside of institutions, supposed to be normal individuals. Inquiring closely into their histories, he discovered that 7 of them had insane parents, brethren, or children; in 19 there were decided psychic abnormalities, and only 7

Fig. 261.—Broad, band-like helix; no anthelix; no lobule; excessive size of fossa cymbæ.

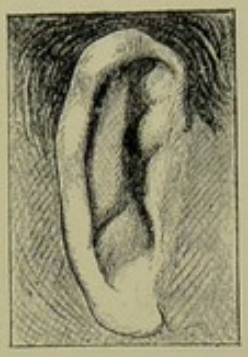


Fig. 262.—Excessive length of ear; fusion and distortion of helix, anthelix, antitragus, and lobule.

Fig. 263.—Triplication of crura furcata; malformed helix and antitragus; absent lobule.

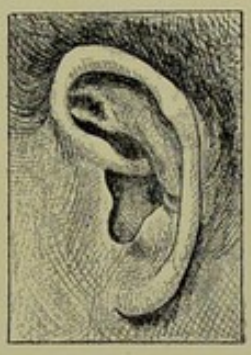


Fig. 264.—Fissure in anthelix; slight Darwin tubercle; slight antitragus.

Fig. 265.—No crus superius; no anthelix; small fossa conchæ; few details of ear.

Fig. 266.—No lobule; no fossa conchæ; shallow fossa scaphoidea; fusion of helix, anthelix, and antitragus; a type of Stahl ear, No. 3.

Fig. 267.—Prominent anthelix; maldeveloped helix; absence of lobule; diminution of the concha; Wildermuth ear, No. 1.

were apparently normal persons. As regards heredity, it is very common for children to inherit ears with the identical characteristics of those of one or the other parent, but, on the other hand, it is not uncommon for the ears of the children to be quite different.

Anomalies of the Limbs.—Paralysis, atrophy, retarded growth, club-foot, and athetosis are conditions due to disease of the brain, and are observed in many cases of paralytic idiocy. These are not properly stigmata of degeneration, although they may be such under some circumstances, as, for instance, when club-foot or club-hand has a teratological origin. On the other hand, there are anomalies having a hereditary character, which are essentially degenerative indices. Among these may be mentioned congenital luxations, supernumerary fingers or toes (polydactyly), fusion of fingers or toes (syndactyly or aschistodactyly), excessive length of the arms as compared with the rest of the body and the lower limbs, missing fingers or toes (ectrodactyly), missing limb (ectromelus), fusion of the extremities (symelus or symmelus), or absence of parts of limbs so that they are excessively short (phocomelus). There may also be anomalous brevity of some digits as compared with the relative proportions of normal digits. Excessive volume of limbs (megalomelus) or digits (megalodactyly) or excessive gracility of limbs (oligomelus) or of digits (oligodactyly) also deserve mention.

Fig. 268.—Phocomelus right arm in epileptic girl; right humerus several inches shorter than left; arms otherwise perfect.

Anomalies of the Body in General.—Local malformations are naturally of more importance than general anomalies of the whole form, but it is necessary to study the relative proportions of the entire figure from an anthropometrical point of view, and to compare the results with normal standards. Excessive diminutiveness of figure, as well as excessive or giant growth, are indications of degeneracy. So, too, are infantile characteristics in an adult, feminine peculiarities in males, and masculine traits in females. In this regard, observations of the relative proportions of the shoulders and pelvis are particularly useful. The occult form of spina bifida with local hypertrichosis is met with. Deviation of the vertebral column among neuropaths is mentioned by Féré. They may be lordoses, scolioses, or kyphoses in various degrees. The coccyx may present peculiarities, such as simulation of a tail. Thoracic asymmetry or other deformity is observed at times. Absence of pectoral muscles, or of muscles in various parts of the body, has significance. Herniæ are evidence sometimes of arrest of development of some part of the abdominal wall. Excessive development of mammary glands in males, or their absence of reduplication (polymastia) in either sex, constitutes an evidence of degeneracy.

Anomalies of the Genital Organs.—Among the genital anomalies

in males are cryptorchismus; unilateral or bilateral microrchidia; spurious hermaphroditism; insufficient development of the entire genital apparatus; hypospadias; epispadias; defect, torsion, or great volume of the prepuce; median fissure of the scrotum; imperforate meatus.

In females the labia may be abnormally large, simulating a scrotum; sometimes very small. The clitoris may be exceedingly large. The labia minora may be hypertrophied. Sometimes there are intermediate folds between the labia minora and labia majora. The labia minora may be pigmented, particularly in brunets and when they are hypertrophic. There may be imperforate vulva, or atresia of the vagina, or double vagina; uterus bicornis is sometimes met with.

Anomalies of the genito-urinary apparatus should always be sought for, for, though most frequent among idiots, imbeciles, epileptics, and the like, they are by no means rare in other classes of degenerates and in degenerate families. In males, defect of the testicles often coincides with general excess of growth in the whole body or in the lower extremities, such as is often produced by castration in man and lower animals.

Fig. 269.—Hypertrichosis in a female imbecile.

Anomalies of the Skin.—Among the anomalies of the skin are to be mentioned adipose thickening; polysarcia; precocious and often abnormal development of the hairy system; hair along the spinal column; rudimentary tail; premature grayness; a glabrous chin in grown men; persistent lanuginous character of the hair; excessive growth of hair on the chin and breast in women; complete or partial discoloration of the hair (albinism, vitiligo); local or general hypertrichosis; partial or complete absence or fetal state of the nails; melanism of the skin; pigmentary or vascular nevi; molluscum; ichthyosis; vitiligo; albinism; pigmented spots.

Anomalies of Motor Function.—Delay in acquiring a knowledge of the proper use of muscles for walking, eating, and the like may often be regarded as an index of degeneracy. Where ordinary etiological factors may be excluded, tremors, tics, epilepsy, and nystagmus may have a similar value. Even when not congenital, they often indicate hereditary instability of the nervous system.

Anomalies of Sensory Function.—The numerous anomalies of function in connection with the eye have already been mentioned. Congenital deafness has also its significance. So, too, have hereditary forms of migraine and neuralgia. Certain defects or excesses in general cutaneous sensibility have been noted as frequent among degenerates. Thus several excellent writers on this subject have stated that a

general anesthesia is not uncommon, especially among lower classes of degenerates. In some instances there is hyperesthesia.

Anomalies of Speech.—It may be questionable as to how far stammering and stuttering are to be looked upon as functional degenerative stigmata, but they are certainly found more often in children with a neuropathic inheritance than in children with good heredity. Delay in the acquisition of language and complete or partial defect of speech have more significance.

Anomalies of Genito-urinary Function.—Sexual irritability, impotence, sterility, and urinary incontinence must be considered as indices of neuropathic disposition. Retardation of puberty in both sexes, but especially in the male sex, is a noteworthy indication.

Anomalies of Instinct or Appetite.—It has been pointed out that, among all degenerates, there is a taste or appetite for certain foods or drugs which tends to favor their dissolution (alcohol, morphin, cocain, and the like). In many cases of inebriety the uncontrollable appetite is to be looked upon as a functional stigma of neuropathic inheritance. Gluttony, merycism, and the like are usually similar indications.

Miscellaneous.—A diminished resistance against external influences (such as strains of various kind) and diseases is significant. Great precocity of intellectual development and of certain aptitudes, and morbid emotional conditions, are among suspicious indications of a neuropathic basis.

The psychic stigmata of degeneracy need only the foregoing enumeration.

PHYSICAL AND MENTAL STRAIN.

At the beginning of this chapter I spoke of the etiology of insanity as being describable in two terms, heredity and strain—heredity, which renders the nervous organization unstable, the strain, which causes the unstable nervous centers to collapse. Doubtless there are limits of endurance in any organization, no matter how strongly balanced, if the strain be great enough, but the instances of insanity developing in individuals with properly balanced and adjusted nervous organizations are rare indeed. The strain which breaks the unstable nervous system is physical or moral, often both. What organism could withstand the assaults upon its integrity of all three of these factors—heredity, physical ill-health, and cankering care? It is difficult to estimate accurately the proportion of one cause as compared with another, since usually several are associated in the same case; but I believe that statistics will support me in the statement that the physical causes (in which I include alcohol, bodily diseases and disorders, accident and injury, old age, the puerperal state, the menopause, and the like) surpass the moral causes (grief, domestic trouble, business worry, overwork, religious excitement, love affairs, fright, nervous shock, etc.) as factors in insanity by about two to one—that is, twice as many are made insane by physical strain as by mental strain. It now behooves us to

examine these divers stresses, and to show how some of them give a special color or character to the psychosis developed. It is best to present them somewhat in the order of their frequency, under two or three categories, the most common and most important first, the rarest last. The physical, physiological, and moral causes, then, will be considered in the following order:

Physical:

1. Toxic (autotoxins, alcohol, narcotics, metallic poisons, etc.).
2. Bodily diseases and disorders (syphilis, acute and chronic diseases of the nervous system).
3. Trauma to the head.
4. Nervous exhaustion.

Physiological:

1. Puberty.
2. Puerperal state.
3. Menopause.
4. Senility.

Moral:

1. Emotional strain.
2. Imitation.

Toxic Influences.—It is not surprising that deleterious agents in the blood, which bathes every cell and fiber of the nervous system, carrying thither the necessary nutritional elements and removing thence the waste products, should readily overstimulate, retard, pervert, or destroy its high functions. Some of these agents (like alcohol) also affect the nutrition of the central nervous system, by inducing disease of the arteries and of the stomach, liver, and kidneys. Some of the poisons cause insanity by long-continued chronic action upon the nervous system, and others by acute intoxication.

Auto-intoxication.—Accumulation of deleterious agents in the blood in such quantity as to affect the nervous system—*e. g.*, carbonic acid and the poison of diabetes and of uremia—has been long known to medical science; but the more mysterious poisons produced by disease in various parts of the body, by fermenting or putrefying substances in the alimentary tract, and by some of the acute infectious fevers, have only of late taken an important place in the etiology of the psychoses. We do not yet know how frequently auto-intoxication from absorption of intestinal poisons determines insanity, but the facts thus far collected point to the origin of a considerable number of cases from this cause. These cases are usually of depressed type, but sometimes maniacal.

Alcohol.—While the position of autotoxemia as a factor in etiology is not yet determined, we may say of alcohol that it stands foremost (after heredity) as a single, independent cause (eighteen to twenty per cent. in males). Acute alcoholism rarely induces a psychosis. Alcoholic insanity commonly develops from chronic alcoholism, from the excessive use of the poison for a long period of time. It is three or four times as frequent as a factor in the insanity of males as of females. Usually it is not difficult to discover the cause of an alcoholic insanity, but, should alcoholic abuse be denied, an investigation of the condi-

tion of the viscera will often throw light upon the subject (cirrhosis of the liver, fatty heart, chronic gastric catarrh with heavily furred tongue, chronic nephritis, and arteriosclerosis). Corroborative evidence will generally be afforded, too, by affections of the nervous system (alcoholic polyneuritis; alcoholic epilepsy; muscular paresis here and there in the hands, face, or tongue; fibrillary tremor of the face and tongue, fine or coarse tremor of the fingers and hands; paresthesias, hyperesthesias, neuralgias; muscæ volitantes, tinnitus aurium, amblyopia, and visual hallucinations). The peculiar psychic degeneration of alcoholism is very characteristic. This consists of gradually weakening memory and will, slowness of perception and judgment, and loss of esthetic and moral sense, with occasional states of depression and accesses of anger. The psychoses which develop upon this basis are marked by two or three features, which are considered rather pathognomonic:

1. Often a peculiar loss of the sense of time and place (a paramnesia).
2. A tendency to illusions and hallucinations, innumerable, changing, mobile, and variegated.
3. A tinge of weak-mindedness in the psychic symptoms presented.

Hysterical manifestations are not uncommon in alcoholic insanity.

Morphin.—Morphin is, among the alkaloids, the most frequent cause of insanity. It is a sad commentary on the heedlessness of some medical men, but the family physician is responsible in almost every case of development of the morphin habit and its far-reaching consequences. It should be looked upon as a sin to give a dose of morphin for insomnia or for any pain (such as neuralgia, dysmenorrhea, rheumatism) which is other than extremely severe and transient. The earliest symptom of morphinism is a general sensation of disquiet, manifested by incoherence of thought, difficulty of concentration of the mind, marked motor restlessness, and insomnia. The dose is gradually increased, and may reach a maximum of five or more grams.

The chief physical disorders induced by long-continued use of morphin or opium are as follows:

1. Anorexia and constipation (later, diarrhea often).
2. Cachectic anemia.
3. Cardiac weakness and intermittence, and bradycardia.
4. Muscular weakness with tremor.
5. Miosis in the early stages, mydriasis later, with sluggish reaction of the pupils.
6. Impotence. Amenorrhea in women.
7. The knee-jerks are often absent.
8. Diminished sensibility to touch and pain, and concentric limitation of the visual fields.
9 Headaches and localized shooting pains, neuralgias, and paresthesias.
10. Sensation of feeling cold.

The psychic symptoms may be summarized briefly, thus:

1. Simple elementary illusions and hallucinations, muscæ volitantes, tinnitus aurium.

2. Loss of will and esthetic sense, irritability; moral perversion, as in alcoholic psychic degeneration, but with little failure of memory.

3. Diminished attention, incoherence of ideas, and easily fatigued intellectual powers.

A well-developed psychosis is usually the result of abstinence from morphin, and not of the chronic misuse of it. It varies in degree up to a type approaching acute mania.

Cocain.—Of recent years there have been numerous instances of cocain insanity, and they are doubtless growing more frequent. While with morphin it is the abstinence that is prone to induce a psychosis, with cocain, on the contrary, it is the prolonged use of the drug that develops the insanity, while abstinence gives rise to few noteworthy symptoms. The misuse of cocain leads to the evolution of an acute hallucinatory paranoia.

Hashish (Cannabis Indica).—We never see insanity from this cause in America, but in Egypt and India it is extremely common. In visits paid by the writer to the Cairo Insane Asylum in the winter of 1891–'92,[1] he observed 64 cases of the 248 patients in the institution in which the insanity was due to the inhalation of hashish by smoking. The symptoms produced are indigestion, diarrhea, increased appetite, dilatation of the pupils, drooping eyelids, anemia, general debility, and delirium. The earliest mental symptom is marked and increasing timidity, sometimes amounting to *folie du doute*, or an agoraphobia.

Atropin; Hyoscyamin; Hyoscin.—These isomeric alkaloids have much the same physiological effects (mydriasis, paralysis of accommodation, dryness of the throat, depressed heart's action, dreadful illusions and hallucinations, etc.), but instances are not common of their giving rise to psychoses. However, it is probable that the employment of one of these as a secret cure for drunkenness has been the cause of serious insanity in a considerable number of cases that have found their way from sanatoriums to asylums.[2]

Metallic Poisons.—Lead and mercury at times induce insanity, the former much more frequently than the latter. The intoxication is chronic, but the psychosis developed may be either acute or chronic. Both of these poisons produce similar psychic symptoms, such as vertigo, sleeplessness, rudimentary or marked hallucinations, confusion and incoherence, anxious depression, and often persecutory delusions. In severe cases there is dementia. In lead cases there are usually to be observed the concomitant physical symptoms, such as anemia, colic, blue line on the gums, tremor, arthralgia, palsies, and convulsions. In mercury cases we note stomatitis, tremor, and gastro-intestinal catarrh. Hysterical symptoms are not infrequently superadded upon the lead and mercury psychoses.

Various Poisons.—There are many other poisons which, in rare instances, produce insanity. Among these may be mentioned coal-gas, carbonic oxid, stramonium, henbane, hemlock, bisulphid of carbon,

[1] "The Insane in Egypt," "N. Y. Med. Record," May 21, 1892.

[2] Dr. B. D. Evans, Superintendent of the Morris Plains Asylum, N. J., has collected a number of such cases.

etc. The writer described some years ago three cases of bisulphid of carbon insanity which ran their course under the type of acute mania going on to recovery, studied by him at the Hudson River State Hospital for the Insane.[1] All three were workers in a rubber factory.

Bodily Diseases and Disorders.—Syphilis.—Syphilis is one of the most important of the physical causes of insanity. It acts upon the brain indirectly through wide-spread, severe disturbance of general nutrition and through arteriosclerosis, and directly by the production of diffuse changes in the tissues of the central nervous system, or of circumscribed meningeal deposits or intracerebral gummata. The degeneration of cells and fibers, the gliosis and the arteriosclerosis, are possibly due to toxins created by specific micro-organisms, and not to the direct influence of the germs themselves, which may explain why syphilitic psychoses are ordinarily late manifestations of syphilis. General paralysis and cerebral syphilis are the chief phases in which the psychosis is presented. It is often difficult to obtain a history of syphilis in a patient, so that the statistics as to the frequency of syphilis as a cause of general paresis, for instance, are generally faulty. Where the history is uncertain, a careful examination may indicate the existence of syphilis (hereditary syphilis in the children, leukoderma, cicatrices, swelling of the lymph-glands, periosteal deposits and tophi, perforation of the palate, nasal symptoms, etc.).

Hereditary syphilis plays a part in the etiology of the psychoses of early life,—for example, imbecility and idiocy,—though probably not so great a part as is frequently asserted, for, in a considerable experience with such conditions at the Randall's Island Asylum for Idiots, I have seen but little hereditary syphilis.

Acute Infectious Diseases.—Typhoid fever, malaria, pneumonia, influenza, and acute articular rheumatism head the list of acute fevers which sometimes superinduce insanity. Disturbances of nutrition, high fever, and toxic changes in the blood are responsible for the symptoms developed. Perhaps the toxin-producing bacteria are the chief agents, acting by direct influence upon the cortical cells and fibers. If this be true, these cases were better classed under the head of Toxic Influences. At the height of a fever we have a febrile delirium, characterized by hallucinatory incoherence; but, later on, when the fever has diminished and the organism is weakened by disease, such manifestation is termed "inanition delirium." From either the febrile or inanition delirium a psychosis may develop, usually assuming the type of a hallucinatory paranoia with self-depreciatory or persecutory delusions, in some cases with a tendency to agitation, in others with inclination to a stuporous condition. Mania and melancholia are rare, stupidity with a proclivity to terminal dementia more common. Malarial psychoses sometimes exhibit a certain periodicity corresponding to the intermittent nature of the cause. Heredity, alcoholic degeneration, etc., also play a considerable part in the etiology of this form of toxic mental disorder.

[1] "Boston Med. and Surg. Jour.," Oct., 1892.

Tuberculosis.—The disturbances of nutrition in tuberculosis, as well as the mental depression sometimes associated with the disease, occasionally lead to the development, out of an exhaustion or inanition delirium, of a true psychosis—a melancholia or a hallucinatory excitement. It may be said, however, that the relation of tuberculosis to insanity is much more frequently that of sequel than of prodrome, for many cases of melancholia and stuporous forms of insanity die of this disease owing to shallow respiratory functions and insufficient nutrition.

Carcinoma.—The progressive cachexia induced by malignant disease, as well as the direct effects of cerebral metastases, sometimes lead to psychopathic conditions resembling those of tuberculosis.

Heart Disease and Atheromatous Arteries.—Cardiac disease is frequently found among the insane, but its precise relation to the psychoses is obscure. Doubtless, in so far as it disturbs the circulation and interferes with cerebral nutrition, it predisposes to mental instability. On the other hand, disease of the arteries (senile, nephritic, syphilitic, alcoholic, cachectic), is a much more effective disturber of nutrition, and at the same time gives rise to serious focal lesions, such as miliary aneurysms, thrombosis, and hemorrhage, which may be etiologically associated with various psychopathies.

Nephritis.—The nephritic psychoses assume usually the type of a hallucinatory paranoia, and therein resemble other toxic insanities. It is probable that toxic changes in the blood are here of more importance than the changes in the vascular walls, though these, too, have their significance.

Gastro-intestinal Disorders.—These sometimes induce hypochondriacal melancholia, and predispose to psychoses of various kinds by disturbing nutrition; but their frequent relation to insanity is generally a consequence rather than a cause.

Diseases of the Genital Organs.—There are serious disorders of the female genital organs which occasionally play a rôle in the causation of insanity, but their importance as factors has been grossly exaggerated, and much harm and little good have followed operative interference for the relief of the insanity. Probably the cessation of menstruation (usual in acute insanities) has been misinterpreted as significant of genital disease, and thus given rise to a grave error.

I would not be understood as decrying operative or other treatment altogether, if such be indicated; but let no one be deceived into expecting benefit from the procedures, except in rare instances.

Having briefly examined most of the general physical disorders which are concerned in the causation of insanity, we will now turn our attention to certain functional diseases of the nervous system which, by reason of their localization in the cerebral cortex, are prone to assume a very important part in psychopathology. These are epilepsy, hysteria, and chorea.

Epilepsy.—Epilepsy is almost as common a disease as insanity itself. Asylum physicians, whose experience with epilepsy is limited to cases associated with mental disorder, tend to overestimate the frequency of insanity among epileptics. Thus, it is often stated by them that psychic

degeneration is manifested in sixty to eighty per cent. of all epileptics. But the fact is that probably not more than ten to fifteen per cent. of epileptics develop insanity; at the same time the proportion is so large as to show a close relation between this functional cortical malady and mental disorders. When progressive epileptic degeneration occurs, it manifests itself by the following symptoms:

1. Slowness of ideation and articulation.
2. Abnormal irritability of temper.
3. Hypochondriacal depression.
4. Paranoid outbreaks of various kinds.
5. Dementia.

Hysteria.—Hysteria is also a functional neurosis of the cortex, often closely associated with divers psychoses. There is a species of hysterical psychic degeneration, and the neurosis frequently gives a special color to different forms of insanity. The symptoms noted (aside from the peculiar sensory and motor manifestations familiar to us in simple hysteria) on the mental side are as follows:

1. Lack of logical coherence and sequence of thought, but with perfect intelligence. Defects of memory, with rudimentary persecutory and erotic delusions, are encountered frequently.
2. Extreme uncontrolled and morbidly changeable emotions. Profound egotism.
3. Frequent illusions; occasional hallucinations.
4. Conduct and speech are based upon emotional impulsiveness, uncontrolled by ethical considerations of any kind.

Organic Nervous Diseases.—The psychic disorders induced by organic processes in the brain, such as meningitis, tumor, softening, hemorrhage, and the like, are characterized either by symptoms of retardation of functions or by symptoms of irritation, and are due either to pressure or to the indirect influence of the lesion upon the circulation or nerve-centers and tracts. Emotional irritability, hallucinations of the various senses, defects of intelligence reaching to imbecility or idiocy, stuporous conditions—these are common mental manifestations of such processes. Since single localized lesions are apt to produce slight mental changes, any marked intellectual defect or multiform psychic symptoms may be looked upon as suggestive of wide-spread, perhaps multiple, lesions, such as multiple sclerosis, multiple tumors, syphilis, etc. Sometimes true insanities develop in these cases, particularly when there is hereditary instability of nervous organization.

Trauma to the Head.—A blow upon the head is one of the most direct of stresses to which the brain can be subjected. It is not so much the local effect of the injury (which, indeed, would not present psychic symptoms differing materially from those of any other local lesion of the brain such as have just been considered), but the general effect of a commotio cerebri that we are called upon to consider. The syndrome of mental disorders induced by such cause has been well termed by the Germans "commotion insanity." The effect of a violent blow, jar, or jolt to the head must have some influence upon the molecules of the brain as well as upon the encephalon as a mass, must dis-

place and disarrange delicate microscopic structures, such as the cells and fibers. If the blow be insufficient to produce complete loss of consciousness, there will be a dazed, bewildered condition, and the patient will struggle or grope about in a confused way. There may be a loss of memory, more or less extensive, as a result. Naturally, the newest organizations of tissues, being the most fragile, will be the most easily disarranged; hence, with amnesic defects, it will be the most recent acquisitions, or such as cluster about the time of the injury, which will suffer most. The patient will experience strange sensations in his head. The head may feel as if it were going around. Objects seem to move. There is a feeling of being intoxicated or of dizziness. A general hyperesthesia and hyperalgesia are not uncommon, while a hypalgesia is occasionally observed. Among psychic symptoms hallucinations and painful effects are prominent, generally of a terrifying nature. Associations may be so interfered with as to induce difficult ideation, mental confusion, and a genuine primary incoherence. The motor expressions are often characteristic, consisting of catatonic conditions, impulsive acts of violence, and aimless wandering about. In some cases no particular results of the trauma are noted until the lapse of a few hours or days, when suddenly the traumatic psychosis develops. After the psychosis has run an acute course, a condition of chronic insanity or of a secondary dementia may follow. Such a secondary dementia may simulate very closely general paresis, particularly if it be progressive. It can not be said that there are any well-authenticated cases of true general paralysis dependent upon traumatism.

There are not infrequently instances of the creation, by trauma to the head which has induced no direct evil consequences, of an unstable nervous system, of a predisposition upon which other etiological factors may operate later in life.

Insolation probably acts upon the brain in a manner similar to traumatism.

Nervous Exhaustion.—Stresses of various kinds, mental or physical, especially in conjunction with the impairment of the nutrition of the central nervous system, induce an exhaustion upon the basis of which a psychosis may develop. The mental strain may be from overwork, overstudy, insomnia, and the like; the physical from masturbation, sexual excess, hardships. The nutritive impairment is the result of some blood-change or deficiency, such as constitutional anemia, a cachectic state, etc. The physical symptoms of such exhaustion are: slowing of the thought processes, difficulty of recollection, want of ability to concentrate the attention, rapid fatigue on mental exertion, emotional irritability with an undertone of depression, leading often to fully developed insanities, which are designated as asthenic psychoses. The common features of such psychoses are retardation and incoherence of the mental processes, manifested even in the quality of the hallucinations and delusions. But almost any form of insanity may be evolved from this asthenic state of the nervous system, such as mania, neurasthenia, stuporous states, and various types of paranoia.

As Ziehen points out, it is also interesting to observe how any exhausting psychosis may in itself induce this asthenic condition with the characteristic features of an asthenic psychosis, as a result of which we have a secondary type of mental disorder developed upon the basis of the original insanity.

Physiological Factors.—Puberty, the puerperal state, the climacteric, and senility are indirect strains to which the organism is subject, by reason of the more or less profound physiological commotions they arouse in the nervous system—commotions which may well disturb the normal adjustment and equipoise of the thousands of delicate processes going on in the brain, and thus enormously increase its vulnerability to the direct factors which beget insanity.

The curve of psychic morbidity reaches its highest points, corresponding to maximal aggregations of etiological factors in both sexes, at puberty, middle age, puerperal periods, the climacteric, and senility.

Puberty.—From the thirteenth to the twentieth year there are remarkable changes, physical and mental, in the growing individual. These are more noteworthy in the female than in the male sex, for the time is shorter for the change from girlhood to womanhood than from boyhood to manhood. The evolution of the sexual characters and the development of the powers of reproduction induce a stream of innumerable new stimuli from the genital organs to the brain, accompanied by wholly new organic sensations, new associations, and new and powerful emotions. The evolution is rapid, and, as is the case with all rapid development, more or less unstable.

The boy grows fast in body, takes on the aspect of manhood, with a stronger and more rugged frame, a changing voice, a budding beard. His mind is filled with new sensations, emotional, sentimental, amatory, and with changing, fantastic, illusory dreams and imaginings. Even in the normal youth this nascent state, this struggle of the emotions, thoughts, instincts, impulses for new associations and new combinations, may be greatly aggravated in many cases by masturbation, in others by nutritive disorders. If this be so with the normal individual, how much greater must be the stress of puberty to the individual with a constitution vitiated by hereditary taint!

The girl leaps more quickly into her place in life. The physical changes are more rapid in her, and at the same time more varied and noteworthy. It is a time of tumultuous activity of mind and body in an organism which has not the numerous outlets for surplus energy possessed by the other sex.

The psychoses of puberty are various in their expression. They may manifest themselves as a mania, a melancholia, a paranoia, or as an insanity with peculiar color, to which the name hebephrenic modification has been given; so that we speak of a hebephrenic mania, a hebephrenic melancholia, etc.

By the designation hebephrenic is understood the following syndrome: Extraordinarily rapid and paradoxical changes (depressed ideas in the midst of boisterous gaiety, jocularity in the deepest depression), with paradoxical facial expression and paramimia; exalted motor

activity (laughing, dancing, grimacing, exhorting after the manner of an orator, often with incomprehensible words and sentences); conduct and action without apparent object, but often with the semblance of desiring to attract attention.

Puerperal State.—Pregnancy, parturition, and lactation diminish the vitality of woman, debilitate and weaken her entire organism, induce a species of physiological commotion in her nervous system, and, in short, bring to bear a strain upon her which is, even under normal conditions, attended by emotional irritability, depression, morbid yearnings, etc. It is not strange, therefore, that the puerperal period in women with unstable nervous systems should often be an exciting factor in the development of psychoses of various kinds. In about ten per cent. of insane women the insanity has its origin at the epoch of reproduction. The majority of these cases are parturitional (seven and a half per cent.), while about a fourth are lactational and a tenth pregnancy cases. It is perhaps true that there are many cases of parturitional psychoses in which the insanity is not so much due to the stress of labor as to possible auto-intoxications from poisonous substances absorbed during the catabolic changes incident to subinvolution of the enlarged uterus. As important factors, too, we must include loss of blood, parametritis, sepsis, mastitis, etc.

There are divers forms of insanity consequent to the puerperal state, such as acute hallucinatory paranoia, melancholia, stuporous insanity, mania, and neurasthenic insanity.

Menopause.—The climacteric, between the ages of forty and fifty, is another epoch of change in woman, a period of involution in its way analogous to the evolution at the age of puberty. There is a physiological commotion in the nervous system at the time of the cessation of ovulation and menstruation, a disequilibration associated, even in normal individuals, with numerous neurotic manifestations, and, in such as have unstable organizations, attended with peril to the mental integrity. Melancholia, simple and hallucinatory paranoia of chronic character, and circular insanity are the forms of psychosis incident to the menopause. About four per cent. of the cases of insanity in women are due to the climacteric.

Senility.—The involution of all the tissues of the body characteristic of especially the seventh decad of life forms also a frequent basis for insanity which depends, in the main, upon the loss of functional activity in the cerebral cortex. Such loss is notable even in normal individuals. The latest acquisitions of the mind are the least stable; hence the conspicuous loss of memory for events of recent occurrence and the tendency to live in the past. The scope of interests, sympathies, and ideas narrows itself down to the individual's immediate physical comfort and needs. While the physiological involution of senility belongs to the seventh decad, in many instances it begins long before this, owing to general debility, endarteritis, etc. Marked changes in the brain of such nature must, therefore, often superinduce veritable psychoses in individuals predisposed to mental disorder by heredity or by antecedent physical or psychic stresses.

Senile insanities manifest themselves in many forms,—melancholia, mania, incoherent paranoia, hallucinatory paranoia, dementia,—but, of course, modified from the common types by the weakening of the cortical functions previously described. Vertiginous seizures, slight pareses, dreadful hallucinations, and primary anxious conditions are often observed in all of these forms.

The hallucinations appear in senile forms in psychoses which ordinarily run their course without them, and the anxious states in ordinarily non-affective insanities.

Moral Causes.—About twenty-four per cent. of all cases of insanity are ascribed to moral causes, among which are classed domestic troubles, grief over death of friends, business worries, anger, religious excitement, love affairs, fright, and nervous shock. The percentage is greater in women than in men. It is doubtful if any emotion alone can overcome the stability of the normal nervous system; hence it is in the fragile, nervous constitutions of individuals tainted by heredity that extreme emotions are wont to exert their malign influence.

The uncertain equilibrium of the highest nerve-centers in these cases is all too readily overcome by the tumultuous wave of an intense emotional impression. Possibly, the results depend upon disturbance of the vascular innervation. Ordinarily, the greater and more sudden the emotion, the greater the liability of the badly poised brain to succumb; but, like the drops that wear away the stone, an emotion of less intensity may, by long continuance, produce equally disastrous consequences. Some acute psychoses may be suddenly developed by fright, or a transitory emotional insanity for a few hours or for a few days in duration. Among the symptoms are mutism, or incoherence, confusion, isolated hallucinations, delusions, with impulses to violence and aimless wandering, followed later by complete, or nearly complete, amnesia.

The more slowly working affects, like sorrow and worry, often aid in the evolution of melancholia, paralytic dementia, or acute or chronic paranoia.

Imitation.—The so-called psychic infection never influences normal individuals who are brought into contact with the insane. Physicians, attendants, and others who have to do with the insane are never affected, except when morbid heredity and mental and physical overwork combine to prepare the soil for the development of a psychosis. The writer recalls but one instance of an attendant being mentally unbalanced during her service. She was neurotic by constitution and cut her throat a few days after one of her patients had committed suicide in the same manner. But there are not infrequent instances of communicated insanity among members of a family.

The simultaneous development of insanity in two or more persons associated together, or the imposition of delusions gradually arising in the mind of one upon the impressionable intellect of a second, third, or of many persons, has been described under the names *Folie à Deux*, *Folie Simultanée*, *Reciprocal Insanity*, *Folie Imposée*, etc. There are several factors which govern the evolution of such insanities. In both forms a degenerative soil is usually required for the proper germination and

growth of morbid ideas. In the simultaneous variety there must be, in addition to predisposition, that similarity of intellectual substrata which we find particularly in persons who are blood-relations or who are intimately joined together by mutual like and dislike; hence it is that brothers or sisters most frequently manifest simultaneous insanity. Take two healthy children of one family and bring them up far apart, yet there will be innumerable physical resemblances between them, and many peculiarities in their character and conduct which prove them to be consanguineous; if a hereditary instability of nerve-cells had been implanted in them, there would be a tendency to a similar form of dissolution, even if they remained apart. How much greater would this be in two persons so intimately associated as sisters, for instance. In children the study of unconscious imitation is one of great interest. Who has not observed the identity of intonation of phrases, of gesture, of laughter, of many facial expressions, of certain habits, in children either related or brought up together? Such unconscious imitation, as is well known, may lead in children to the contraction of certain nervous and even mental diseases. The contagious quality of emotions is well established. An explosion of laughter will call up smiles on even melancholy faces in a crowd. A pathetic scene on a stage will bring tears and depress the oral angles in a large audience. The unconscious imitation of gestures, such as bowing, often seen in adults, is in a milder degree such mimicry of motion as is observed in dancing mania.

Another element in the imposition of insanity by one upon another is the quality of the morbid mind-product. If a delusion, it must have an air of probability to the person receiving it, and must be gradually developed and imposed. It is because suspicion is inherent in the nature of most persons, because suspicion can wear so much probability of truth, that persecutory delusions are by far the most frequently adopted by others. Credulity is an important factor in the imposition of insane delusions upon others. It was the ready credulity of large numbers of persons, especially as regards religious subjects, that in the past led hundreds of thousands of people to adopt with faith the delusions of paranoiacs like John of Leyden, John Thom of Canterbury, Joan of Arc, Richard Brothers, Joanna Southcott, John Brown, and many others, and actually to sacrifice their lives upon the altar of their beliefs. Though these delusions emanate from an insane person, their acceptance by others does not, of course, necessarily imply insanity in the latter, for delusions of this character have their support in the superstitions of many and in ignorance concerning supernatural matters. A persecutory delusion might be imposed by an insane person upon an intimate associate, and yet the latter need not, of necessity, be insane; but when the exposed individual adopts the delusions, regulates his conduct upon them, allows them to become rooted in his mind, even begins to share the hallucinations of his friend, there is, of course, actual aberration of mind present. Several cases of *folie à deux* have come under my observation. One case was that of two sisters, aged about fifty to fifty-five, Irish, washerwomen, who, living alone in a tumble-down shanty, were often tormented by boys throwing stones at the

house at night, and otherwise teasing them. They finally developed persecutory delusions with hallucinations, and both were very much alike. They became so violent in their demonstrations that ere long both were taken to the asylum, where I took charge of them. They were separated, the result being that one became rapidly demented and the other became a quiet worker, with fixed persecutory ideas and auditory hallucinations.

Another pair of sisters, colored, between forty and fifty years of age, were similarly affected. For ten years one sister had been a paranoiac, with delusions of persecution by means of electricity, which was at all times, night and day, hurled through her body by a vast organization of conspirators. She had hallucinations of hearing. The sisters had not lived together until within six months of my seeing them, the sane sister having recently become a widow. The sane sister gradually adopted the delusions of the insane one, and probably the hallucinations. She believed her sister to be persecuted by an organized band of conspirators with electrical appliances.

A third case was that of a husband and wife, who both became typical cases of melancholia, with, of course, similar delusions, one shortly after the other. Such a case as this might be called a coincidence, and not an imposed insanity. Probably grief over the insanity of the husband was one factor in developing that of the wife, but unconscious emotional imitation between two persons united by special bonds of sympathy was undoubtedly another element.

A fourth example I detailed fully some years ago in the "Alienist and Neurologist" ("Paranoia in Two Sisters," January, 1890):

C. K. and H. K. were respectively thirty-six and forty-two years of age, teachers of music and singers by occupation, of German parentage, and had both been insane for some ten years. Their mother was a case of paranoia, with fixed delusions of an exalted religious nature. She believed herself to be the mother of God. She was never in an asylum, but lived at home until her death. While insane she gave birth to the younger of the two sisters, C. K.

One of them wrote for me an autobiographical sketch, and the other some twenty-five letters, upon which the following facts in their identical clinical history are based:

The instigators of the conspiracy against them are chiefly their uncle, brother-in-law, and sister-in-law, and a brother has also been inveigled into it. By them are employed numerous detectives, expert chemists, and handicraftsmen, and, as they have privately hinted to me, also many lawyers. Openings are made in their rooms in spite of all they can do for the insufflation of noxious gases, smoke, camphorous, chloral, and chloroform vapors; and by some unseen agency substances are thrown at them which produce painful cutaneous eruptions. Their food and water and heating apparatus are tampered with for the introduction of poisons or to produce serious illness. They hear the mechanics at work upon the floors, walls, ceilings, and the voices of the detectives (hallucinations of hearing). Their food has a peculiar taste (hallucinations of taste). Most prominent of all are the singular

odors of the room, of fruit and flowers sent them, of the water (hallucinations of smell). Sometimes they are black in the morning when they look in the mirror (illusion of sight). They are subject to remarkable, generally painful, sensations in their bodies (hallucinations and illusions of cutaneous sensibility).

They hint of imaginary property in Germany, out of which they are being defrauded by relatives. For ten or twelve years they have been driven from one place to another in Brooklyn and New York by their pursuers. As yet they have sought only escape and protection from persecution; they have very rarely manifested anger by pounding the floor when hearing the mechanics at work or by complaint to the landladies, and have not been brought to bay to a condition in which they might turn upon the actual instigators of the conspiracy and do them bodily harm. They have been on the point of a visit to police headquarters to make declaration against their enemies.

From what I can learn of their history in youth the two girls differed from others of their age in a slight degree, some trifling eccentricities and some overweening self-consciousness constituting this difference. They have always been closely united—living together, sleeping together, having the same affinities, talents, pleasures, and pursuits. The development of suspicions and delusions of persecution had been so gradual that it did not become evident to others that they were actually insane until a comparatively recent period. When I first saw them in my office, they came heavily veiled, and, upon removing their veils, their faces were patched all over with small square pieces of cloth, covering sores. These were only an ordinary acne, made much worse by picking, by wearing wet cloths on their faces all night for the purpose of preventing poisonous vapors from entering their lungs, and by the removal of the strongly adhering pieces of linen from the bleeding surfaces. They healed up rapidly when I had prevailed upon them to make use of ung. zinci ox. freely. The face of the younger is particularly characteristic of a degenerate type, one of its features being a disagreeable prognathism.

Some of the skull diameters were pathological in character. One of the sisters died in convulsions from unknown cause, which the other sister still attributes to poison. The living sister still moves about from one part of the city to another, cherishing the paranoiac delusions, but supporting herself in part by teaching music.

CHAPTER III.

GENERAL SYMPTOMATOLOGY OF INSANITY.

EVERY psychic phenomenon is accompanied by a material process in the cortex of the brain. There is no insanity without disease of the cortex. The material disorder of the cortex is diffuse and partly organic, but mostly functional in character. We term it functional, for thus far our pathologico-anatomical and clinical studies have failed to reveal any definite material basis for the majority of psychoses.

The progress made of late years in the study of physiological psychology has illuminated many obscure features of morbid psychology, and has put us in a position to better examine and classify the symptoms of insanity.

There are material processes in the central nervous system unaccompanied by any parallel psychic process. The reflexes and automatic acts are examples. In these phenomena we observe a stimulus, a sensation, a movement. Movement paralleled by a psychic process becomes action. We sometimes speak of conscious voluntary action. Action differs from simple movement in being accompanied by intercurrent images—memory-pictures of former stimuli. A peripheral stimulus excites a cortical center, and is not carried at once to the motor region, but travels first by association fibers to the area in which are stored up residua of former similar stimulations, and later to the motor region. These residua of memory-pictures or ideas may be complex, constitute a series, have many associations, and hence we designate them as an idea-association. Action, therefore, consists of the series: stimulus, sensation, idea-association, movement. The various ideas thus excited tend to different motor expressions, so that the resulting movement or action will depend directly upon the strength of ideas. The stronger ones conquer. Ziehen, whose clear explication of the mental problems of psychiatry the writer closely follows,[1] has well described idea-association as the play or battle of motives. He gives the following example of the physical and psychic processes just described:

I see a rose in a strange garden (stimulus and sensation). A long series of ideas is aroused by the stimulus and the visual sensation of the flower (idea-association). For instance, the memory of the rose's fragrance comes to mind, then I think how well it would look in my room, that it is the property of another, that plucking it would be punishable, and so on. Only after the whole series of presentations has passed before the mind does action follow, and whether I pluck the flower or go my way without it will depend upon the strength and intensity of the conquering idea.

Every psychic process must be regarded upon the basis of such a

[1] "Psychiatrie," Th. Ziehen, Berlin, 1894.

scheme, and as accompanied by its material parallel (progress from the sensory cells to the idea-cells, and from these to motor-cells by means of association-fibers).

Sometimes the idea of movement (memories of former sensations of movement) comes before the movement in the series just described, but generally the movement is perceived after it has taken place by means of the sensation of the movement.

There are really but two psychological elements—viz., sensation and idea. The only process connected with these elements is the idea-association. Their product is action. The so-called mental powers of old-time psychology do not exist. The assumption of a special power of will dominating the idea-association and voluntarily determining this or that movement is particularly superfluous and misleading. The assumption of a special power of apperception which turns its "attention" voluntarily upon this or that idea or sensation to determine the course of the idea-association is equally superfluous.

The presentations or ideas rather follow one another according to laws without intervention of any especial voluntary power of the mind, and the final movement or action is the necessary result of association of these presentations or ideas. Finally, there exists no particular faculty of feeling, for exact investigation demonstrates that our feelings of what is agreeable and what is distasteful, of pleasure and pain, appear never in an isolated state, but always combined with sensation and idea as attributes or properties.[1]

Following Ziehen in these particulars, we shall study pathological psychological processes on the basis of the scheme just described, and in each case investigate, first, disorders of sensation; then, disorders of the memory-pictures, presentations, or ideas; then, again, disturbances of the idea-association; and, finally, the influence of these disturbances upon the actions or conduct of the patient.

DISORDERS OF SENSATION.

Sensation is the first element in the psychic process. It is determined by some external stimulus affecting any sensory nerve. Every sensation has four important attributes—viz., *quality*, *intensity*, *tone* (the accompanying feeling of pleasure or pain), and *space-projection*. We are not especially concerned with the last in morbid psychology.

Qualitative Disorders of Sensation.—The two important classes of qualitative disorders of sensation are *hallucinations* (in which we have sensation without external stimulus) and *illusions* (in which we have the external stimulus, but a transformed or perverted sensation). An external stimulus to a peripheral nerve is carried to the cortex, where it acts as a secondary stimulus in exciting sensation.

Hallucinations.—A hallucination is a sensory impression without external stimulus. It is often also defined as a perception without an

[1] "Leitfaden der physiologischen Psychologie," von Th. Ziehen, Jena, 1893.

object. The patient hears voices where all is silent, sees forms and figures in empty space.

Hallucinations of sight are very common, and vary from the simplest sparks, lights, shimmers, flames, spots, threads, clouds, and shadows to the most complicated groups of persons and landscapes with perfect details. Sometimes they are colorless, like silhouettes; sometimes radiant and fantastic with color. Sometimes they are flat, like pictures; sometimes plastic. Ordinarily, the forms and objects observed are of natural size, but occasionally they are gigantic or diminutive. They may appear close at hand or far away. They may be quiet or full of movement, like the zoöscopic hallucinations of alcoholism. Rarely, real objects are doubled or multiplied (hallucinatory diplopia and polyopia). Real objects are sometimes concealed by the hallucinations, sometimes merely diaphanously veiled. Hallucinations may fill the whole field of vision or appear in homonymous half-fields, as in the hemiopic hallucinations described by the writer in cases of insanity and of homonymous hemianopsia.[1]

Hallucinations of hearing are also extremely frequent, and vary from simple sounds, tinnitus aurium, rushing, roaring, whispering, tinkling, to complicated music and words and sentences. These last may be in natural tone or deep-voiced, whispered or loud; may be the voice of one or many persons; may be pronounced in various languages; may be single words or long orations; may seem near at hand or far removed; and may be heard in one ear, though usually in both. Not infrequently the voice seems to the patient so near that it appears to be in his head or body.

Hallucinations of common cutaneous sensibility may appear anywhere in the skin or in mucous membranes in the form of electric shocks, pricking, tingling, blows, caresses, sensations of heat or cold, indignities to the sexual organs (feeling of cohabitation), etc.

Hallucinations of smell are very common. The patients perceive odors of chloroform, sulphur, noxious gases, smoke, filth, or, on the other hand, the smell of perfumes and flowers.

Hallucinations of taste are so generally combined with those of smell, because of the close physiological relation of the two senses, that true hallucinations of the primary elements of taste (salt, sweet, bitter, and sour) are uncommonly rare. A hallucination of a bitter taste is the most frequent. On the other hand, the combined hallucination of taste and smell (as of blood, filth, etc.) is rather common.

Hallucinations of organic sensation are not rare. The patients complain of peculiar or extraordinary feelings in various organs, such as malposition, gnawing, cutting, pain, etc.

Hallucinations of active or passive movement of the body or its parts depend probably chiefly upon disorders of joint sensibility. The patients feel themselves lifted in the air, floating, the limbs moved actively, the head turned to one side; or, the sensation of movement of

[1] "Homonymous Hemiopic Hallucinations," "N. Y. Med. Jour.," August 30, 1890. A second note on "Homonymous Hemiopic Hallucinations," "N. Y. Med. Jour.," January 31, 1891.

the muscles required for speech may give rise to the hallucination of having spoken a word or sentence.

Various hallucinations are often associated in such a manner as to render the hallucinated objects still more natural and deceptive, though more frequently they are not thus commingled. Thus, visionary figures may speak or be dumb, and the fancied voices may come from visually projected or from unseen persons. Sometimes vision, hearing, and cutaneous sensation may be combined to give reality to the object. Combinations of others are also met with, and, indeed, these mixed hallucinations are common and multiform.

As regards the development of hallucinations, some are doubtless peripheral, but the majority are central in their origin. Disorders of the eye, ear, nasal cavity, mouth, mucous membranes, skin, and viscera may give rise to hallucinations, though they are more commonly the cause of illusions. Hallucinations are never new creations, but are made up of memory-pictures stored up in the cortex ; these may, however, make their appearance in new combinations. The congenitally blind never have visual hallucinations ; the congenitally deaf never auditory hallucinations, though they are noted in acquired blindness and deafness.

Hallucinations are usually of two kinds—those which have to do with the ideas presented in the mind at the time of their manifestations, and those which are concerned with latent memory-pictures. The former are more common, but both may be observed in the same patient. The first kind are those which the patient describes as visions which picture his very ideas, and voices which read off his thoughts as fast as they can come into his mind—indeed, often apparently before he thinks them. The second class of hallucinations often astounds the patient by association with things long past and quite forgotten.

We are taught by physiological psychology that a stimulus to the eye arouses a sensation in the occipital lobe, to the ear a sensation in the temporal lobe, and so on, the sensation further exciting an image which remains as a memory-impression. All normal sensations, then, depend upon the series stimulus, sensation, memory-picture, or idea. Now, hallucinations are always cortical, as regards localization, and depend upon a reversal of the normal course just described, and without the stimulus. The memory-image is excited and then excites the sensation. A certain irritability of these centers will be induced, undoubtedly, by morbid processes in the peripheral nerves or their terminations, such as entoptic or entotic processes, which will render them all the more excitable, since external stimulus is not then altogether wanting. Finding such,—and we should always investigate carefully for a peripheral physical basis,—the dividing-line between hallucinations and illusions becomes less distinct. Naturally, the normal mind recognizes the real nature of muscæ volitantes, tinnitus aurium, neuralgic pains, etc., and it is only the abnormal mind which employs them as material for illusions and hallucinations.

In the examination of a patient we must determine the presence of hallucinations and the effect of their presence on idea-association. One

must not mistake actual occurrences described by the patient, nor the events of dreams confused by him with events of waking, nor ordinary illusions for hallucinations. There is danger, too, of overlooking their presence. Patients conceal them, conscious that the hallucinations are morbid, or knowing that they will be looked upon as such, but will often write about them or tell of them to other patients if opportunity be given. Very often the physician is enabled to recognize their existence from the expression and conduct of the patient.

As regards the influence of hallucinations upon the course of idea-association, the most important question is whether they are regarded by the patient as real sensations or not. He treats them as actual phenomena, as if they were normal sensations, or he distinguishes them from his ordinary sensations as peculiar, novel, and possibly inspired by supernatural agencies; or he is really conscious of their morbidity, but may believe them to be induced by enemies by means of poison. If the hallucinations are faint and transitory, the patient may not be much influenced by them; if they are marked and persistent for a long period, he ultimately loses his critical faculty and comes to believe in their reality. Such being the case, his thought and conduct are bound to be influenced by them, and more powerfully influenced than by normal sensations, or by any reasonable consideration or argument. Hallucinations either inhibit (hallucinatory stupor) or retard (hallucinatory confusion) the idea-association; or they induce direct intrinsic delusions (as when a voice cries "Thou art God," and the patient immediately believes himself to be God). The actions and conduct of a patient are very much influenced, and in multiform ways, by hallucinations. He has the expression of listening, or stares apparently at nothing. He closes his ears, covers his eyes or head, closes up cracks and openings, or listens at the window or keyholes. He refuses or spits out his food. He holds his nose, or suddenly closes the window to prevent the entrance of noxious gases. He turns his head, runs, shouts, lifts his arm quickly, or takes peculiar attitudes, acting upon a hallucination of muscular sense (imperative movements, imperative speech, imperative attitudes). The imperative attitudes may be very persistent and long-continued, and are then called catatonic. Hallucinations often lead to imperative acts which may be of a violent nature. If hallucinations are innumerable, very changeable, and intense, the patient is affected by so-called hallucinatory agitation.

Hallucinations are so extremely rare under normal conditions that they are to be considered as almost always pathological. Illusions are rather common in the normal mind. True hallucinations may occur in apparently normal individuals, but examination will show that such persons are neurotic by heredity, and that some stress of mind or body has induced this psychopathic phenomenon. This is particularly true in childhood.

Outside of the psychoses, hallucinations are met with in toxic states, fevers, cachectic conditions, sun-stroke, and some of the neuroses (epilepsy, chorea, hysteria). A hallucination of any sense may be the aura of an epileptic attack; sometimes, when visual, it may be hemiopic.

Hallucinations are the chief symptom of one form of paranoia. Other psychoses, such as mania and melancholia, manifest them only exceptionally; while still others, like senile and paretic dementia, present hallucinations, it is true, but not in such prominence as to make them a characteristic symptom. Visual hallucinations are more common in acute than in chronic psychoses, and they are seldom independent of hallucinations of feeling and hearing. Auditory hallucinations, on the other hand, are more characteristic of chronic types of mental disorder, and are often observed alone.

The close union of the auditory center with the motor speech center gives a peculiar interest to hallucinations of hearing. From infancy man is trained to think to a great extent in word-images or speech-images, and thinking is, therefore, nearly always associated with some stimulation of the speech-muscle centers in the brain. Therefore, hallucinatory irritation in the auditory area of the brain causes synchronous irradiation to the motor speech center, and words and sentences are heard by the hallucinant as if projected into the external world, or into some part of the patient's body (head, throat, chest, stomach, or even extremities). The stimulation of the speech muscles, however feeble, may be sufficiently strong to induce recurrent sensations of movement in them, which leads the patient to imagine that his thoughts are being read off internally by the voice, and sometimes repeated apparently before the thought has fully developed in his brain.

Illusions.—An illusion is a false perception. There is a stimulus but a perverted sensation, a wrong interpretation. The sensation corresponds only in part to the stimulus. A patient hears the rain falling, but perceives it as music; he sees the bedpost, but imagines it a ghost.

Visual illusions exhibit a transformation of form, or color, or both. This is often favored by indistinctness of outline, as when it is half dark or there is a shimmering, flickering light. But often clear outlines are transformed. The patient may see the familiar faces about him changed into those of strangers, transformed by grimaces, or deathly pale. A sharp distinction between illusory transformation and actual hallucination is often difficult to draw. It is peculiar to illusions that they not infrequently present objects as distorted and diminished or increased in size. This is especially true among epileptics. When this is noted with all objects, it often depends upon entoptic disorders. Thus, metamorphopsia may arise from astigmatism and retinal disease, micropsia from paresis of accommodation, and macropsia from spasm of accommodation. When this is not the cause, perverted association of the sensation, with disordered muscular sense, may play a rôle. Sometimes, though rarely, the illusion may consist of a perversion of color analogous, for instance, to the yellow appearance of objects in santonin-poisoning (due to violet blindness induced by the poison) or to red vision (erythropsia induced by fatigue of the retina for the short-waved rays of the violet side of the spectrum).

Illusions of hearing consist mostly of the construction of words out of inarticulate sounds, or of the misinterpretation of the words or

sentences spoken in the patient's hearing. He may transform them into mocking, indecent, derogatory, or flattering words.

Illusions of common sensibility are, perhaps, more important in insanity than hallucinations of this sense. But they are difficult to study and establish. It is probable that the sandy, earthy taste of food often complained of by patients is more an illusion of touch than of taste.

Illusions of smell and taste are, in the main, unpleasant in character and are more common than hallucinations of these senses.

Illusions of organic sensation are frequently noted, and consist of such sensory metamorphoses, for instance, as the mistaking of intestinal motions for pregnancy, and the feeling of diminution or increase in size of various organs (particularly noticeable in epilepsy and paresis).

Illusions of muscular sense or of movement are rare.

Illusions, like hallucinations, may form their material from the concepts at the moment in consciousness, or from latent memory-pictures.

The theory of the cause of illusions is analogous to that of hallucinations. They arise from a pathological recurrent influence of the excited memory-picture cells upon the sensory cells. The difference lies in the association, also, of an actual external stimulus which undergoes transformation.

Illusions are much more common than hallucinations, and are not seldom met with in normal persons. Often they are difficult to distinguish from one another. Sometimes it is impossible to differentiate true illusions from so-called illusionary judgments, in which we are concerned not so much with a transformation of sensation, as with an erroneous judgment of the character of a normal sensation.

Illusions are noted in all forms of psychoses, especially in acute forms. They are particularly noteworthy in the hallucinatory form of paranoia.

Disorders of Intensity of Sensation.—These consist of hypesthesias, anesthesias, and hyperesthesias. Hypesthesias and anesthesias are observed in various psychoses which are complicated by such disorders as hysteria, chorea, multiple neuritis, tabes, focal cerebral lesions, etc. Hyperesthesia is also encountered in complicating disorders, such as hysteria, tubercular meningitis, neurasthenia; but is also often noted in the prodromal stages of many acute psychoses. It is especially remarkable in the insanities of childhood. A valuable objective sign of hyperesthesia is exaggeration of the superficial reflexes.

Disorders of Sensory Tone.—Agreeable or disagreeable feeling, associated with sensation, is described as sensory tone. Sensory tone may be perverted in insanity so that, for instance, fragrance is perceived as unpleasant, dissonance as pleasant, and vice versâ. One notes such perversions in the slight psychopathic conditions of pregnancy in the form of capricious tastes and appetites. Homosexual perversion is a form of this disorder manifested in the domain of sexual sensation. Pathological disorders of the intensity of sensory tone consist of hypalgesia and analgesia, hyperalgesia, hyphedonia, and hyperhedonia.

The hypalgesias are noted in hysteria, tabes, congenital and acquired mental deficiency, and in severe hallucinatory confusion.

Hyperalgesia is observed under the same circumstances as hyperesthesia. It is most often seen in hysterical and neurasthenic insanities, and almost exceptionally at certain points (such as the supraorbital, infraorbital, mental, Valleix, iliac, intercostal, mammary, vertebral, and cranial suture points) pressure elicits pain. The pain of hunger, which leads in many psychoses to pathological hunger (bulimia) belongs in this category.

Hyphedonia is a morbid diminution of the feeling of pleasure in any sensory perception. It is more important in the domain of sexual sensations than in others, where it may reach the degree of anhedonia. Sexual anhedonia is not uncommonly developed on the basis of a serious hereditary degeneracy, and is frequent, too, in organic disease of the central nervous system (tabes and paresis), as well as in toxic conditions (alcohol, cocain, morphin). Hyphedonia, in connection with hunger sensations, may reach the state of complete psychic anorexia in some insanities.

Hyperhedonia is a morbid increase of positive sensory tone (agreeability of sensation), and is noted most often in relation to sexual sensations.

Disorders of Memory-pictures or Ideas.—Every stimulus in arousing a sensation in the cerebral cortex leaves some material vestige or impression, which remains as a latent memory-image or picture, latent presentation, or idea. Countless numbers of memory-pictures left by innumerable sensations of all kinds are stored away as a material deposit in the brain-cortex. These are rearoused either by the same or a similar stimulus, or excited through the stimulus of some idea-association. Only a few of the millions of memory-pictures are awakened to life at any one moment; all of the others remain latent. The general concept of any particular object is made up of the association of many centers in the brain, some of which are far apart, such as the smell, feel, taste, color, sound, and name of the object. The relation of this object to others of its kind is present in other associations, and these again in others, so that the material basis of an idea must be a perfect network of association fibers; and all of this labyrinth is connected with the complex series of language-centers, but particularly with the motor and auditory speech-centers, which are trained up from earliest infancy to associate the spoken word with the concrete conception. A word, therefore, expresses, like an algebraic x, y, or z, some very intricate and complicated formula. Take words like "home," "right," "wrong," and so on, and think what a countless number of associated memory-pictures each one must represent! Words are simply convenient abbreviations which render more easy the use of concepts in idea-associations.

We distinguish in every idea four cardinal properties: (1) The contents or meaning; (2) distinctness; (3) associated affects; (4) energy or intensity.

The pathological disturbances of ideas may be studied under the headings of disorders of their evolution, durability, concomitant affects and associations.

Defective Evolution of Ideas.—The number of concepts stored up in the brain varies enormously under normal conditions with individuals and races. In morbid psychology we find the number of ideas extremely small among congenital defectives, such as the idiot, the imbecile, and the feeble-minded. The idiot may preserve rudimentary memory-pictures of the simplest things, such as food and eating, light, darkness, clothing, but without speech associations; he will have none of other persons or other objects about him. In the imbecile the concepts are more numerous and may be known by name; he recognizes persons and objects, distinguishes simple colors with difficulty, may have number concepts as high as ten; he has a few concrete ideas, but, as a rule, no abstract ideas. The feeble-minded has a larger number of memory-pictures, may have abstract ideas, recognizes the significance of likeness and similarity, and may use the words God, right, wrong, etc., but in reality be unable to tell the meaning of such complex, abstract conceptions. It is necessary, therefore, to avoid concluding that the idea is present because the word is spoken by such a patient, for it is particularly characteristic of the congenitally feeble-minded to be apt with words while deficient in grasp of their meaning.

Disorders in Durability of Memory-pictures.—The forgetting of a memory-picture, when the stimulus and sensation producing it are not repeated, may be considered to be due to its gradual erasure by the influence of the nutritive processes which affect the cortical ganglion-cells equally with all the elements and tissues of the body. This physiological destruction of the memory-picture is always very slow, but by pathological processes may be rendered enormously rapid. The destruction may be diffuse or limited to one sensory sphere (for example, apraxia, where the sensory ideas of objects are lost, though the sensory apparatus may be intact; mind-blindness, word-blindness, mind-deafness, word-deafness, etc.). But these limited defects of memory-pictures are due to focal lesions in the brain, and do not concern the alienist so much as the diffuse destruction of ideas, although it is true that the latter may sometimes be a sequel to a circumscribed lesion, and, on the other hand, that the diffuse disorder may, as in general paralysis, sometimes affect one region more than another. A loss of concrete ideas, such as general concepts of relationship, etc., which are represented by a wide-spread association network in the whole cortex, can only be caused by a diffuse, far-reaching disturbance. We see examples of such loss in the acquired dementias of paresis, epilepsy, and senility, dementias secondary to acute psychoses, and dementias due to toxic agents. It is natural that the latest memory acquisitions should be lost first, and the older memories successively later, in direct proportions to their age, according to a certain "law of regression," as Ribot terms it. This is to be explained by the want of permanence and stability in the newest arrangement or concatenation of protoplasmic molecules and ganglion-cells. The older impressions have become more fixed and durable.

Since an experience leaves behind not alone a single memory-picture, but a whole series arranged in chronological order, we may, as in amnesias, find pathological states in which there are losses of such series

of ideas during a definite period of time. The so-called subconscious or unconscious states are examples of this phenomenon. They are observed in epilepsy, intoxications, hysteria, narcolepsy, hypnotism, somnambulism, injuries to the head, and in transitory insanity.

Affective Disorders.—Pleasurable or disagreeable feelings accompany ideas, just as they do common sensations; so that there is an intellectual affective tone analogous to sensory tone. If two ideas be presented simultaneously, and if one of these have a stronger emotional quality than the other, the tone of this will be irradiated to the other. Ziehen, in describing irradiation, gives the following example: "If I have met with an accident in any place, afterward not only is the memory of the injury accompanied by an unpleasant feeling, but the memory of the place is likewise mingled with a disagreeable affect. Furthermore, when I again see the spot where the accident occurred, I may feel again the sensation of the injury, accompanied by its unpleasant sensory tone." Here the memory-picture arouses the sensory tone of the sensation experienced. This is termed reflected tone. The most important consequence of the laws of emotional irradiation and reflection is that if in a certain period of time one or several sensations and ideas have a strong and similar emotional tone, all other sensations and ideas presented to the mind during the same period of time will be colored by the tone of the former. Such irradiation creates our moods, which are hence the abstract or summary of the similar emotional tones of the ideas and sensations experienced within any definite period of time.

Moods and emotions influence strongly the flow of our ideas, and, as a consequence, our actions. Depressed moods or affects inhibit, while exalted affects increase the flow of ideas, and likewise the resultant actions. Depressed affects are more durable and persistent than exalted affects. The latter subside rapidly. The more complicated ideas, such as justice, honor, law, family, patriotism, etc., are accompanied by a specific affect or tone which we designate as ethical feeling. Ethical feeling is the result of numerous irradiations, which the single idea acquires from all of the ideas associated with it; and the sum of the ethical feelings of an individual gives him his character (Ziehen).

In morbid psychology we classify changes in the affects as pathological depression, exaltation, irritability, apathy, and mutability.

Depression.—Depression is observed in many forms of insanity, particularly as a prodrome, but is characteristic of the melancholy types. It is a very common prodrome of acute mania, and a long period of morbid depression is frequently noted as an antecedent in general paresis. It is observed in neurasthenia, in hypochondriasis, and not seldom as an interlude in any psychosis. It is the cardinal symptom of melancholia. Depression is a normal consequence or accompaniment of sorrowful or dreadful hallucinations and ideas, and is, under such conditions, termed secondary. It is primary depression with which we are more concerned in insanity—a depression not at all or but slightly motived by such hallucinations and ideas as we have just described, but a mood which takes possession of the mind of the patient and gives its own original color to every thought arising in his mind and to every

external object presented to his consciousness. Past, present, and future are alike under the shadow of this mood. When mild in degree, the patient feels only an inexplicable sadness—a certain restlessness or state of worry; but when extreme, this general mood of sadness becomes a condition of pathological anxiety—a mixed feeling of grief and dread, often accompanied by a feeling of suffocation or pain about the heart, and, therefore, frequently designated as "precordial anxiety" or "precordial fright." When primary depression is present, the patient feels the change in his mental condition, observes that he no longer is cheered by the usual pleasant events of his daily life, that these rather intensify his misery. The affection and sympathy of his friends and family either awaken no response in his own breast when he tends to believe that he has lost all natural feeling, or they may awaken suspicion, dislike, and distrust. The inhibition of the flow of thought restricts his ideas to himself and to the somber contents of his mind. He is not easily distracted from such contemplation, and answers questions, if at all, very slowly and with great difficulty. Nearly all cases with morbid depression complain of disorders of visceral sensibility, from a slight sense of constriction at the throat to precordial distress, from a general feeling of illness and uneasiness to a feeling of extreme and general restlessness. No doubt depression influences often the entire musculature of the body, so that the patient wrings his hands, picks his fingers or head, walks up and down, is extremely agitated, goes into a condition of catalepsy or catatonia, or, on the other hand, remains absolutely immobile and requires the service of others for every movement. The muscles of the peripheral arteries contract and increase the frequency of the heart's action. The constriction of the throat is probably an actual contraction of the esophageal muscles. Precordial anxiety is most likely due to vasomotor disturbance in the vessels of the heart. The constipation so frequent in depressed conditions depends doubtless upon retardation of peristalsis. Thus we observe in one case motor inhibition, in another motor excitement, and in some alternations between the two.

In seeking to explain the mood of sadness and uneasiness which he feels, the patient tends to develop delusions. He invokes the first ideas which would naturally come to him under such circumstances. He seeks in his past life for some sin, the commission of which may have brought this punishment. He magnifies some trivial error in his youth into an unpardonable sin. Or he comes to think that poverty stares him in the face, or that he can never recover from an incurable illness which has taken possession of him. Occasionally, a persecutory delusion is evolved from a primary depression.

Exaltation.—Exaltation is occasionally noted as an intercurrent symptom in any psychosis. It sometimes alternates with depression, forming a constant cycle, as in circular insanity, and sometimes it presents itself during convalescence from melancholia as a reactive phenomenon. In the majority of cases of general paresis a period of exaltation develops. In maniacal states, however, it is observed as a cardinal symptom. As with depression, we distinguish a secondary

exaltation consequent upon agreeable hallucinations and ideas, and a primary or unmotived exaltation. In exalted moods the somesthetic sensations are pleasurable and give rise to feelings of perfect health, strength, and vitality. The stream of ideas is hastened, and as a result the patient becomes, according to the degree of exaltation, talkative and garrulous, or exhibits a veritable logorrhea,—a constant, rapid flow of words,—which may often assume a riming, singing, or oratorical character, with marked incoherence. The rapid stream of presentations is paralleled in the motor sphere by increased muscular activity, varying from busy occupation with nothing to gesticulating, grimacing, and dancing, and to the wildest and most violent motor excitement.

Primary exaltation frequently gives rise to delusions of a grandiose character, though these are unstable and fleeting, corresponding to the rapidity of change in the contents of consciousness. But the feeling of well-being and of egotism which makes up the fundamental mood of the exalted patient leads him to be extremely impatient of any restraint of his activities; and, in consequence of this, the reactive feeling of aggressive anger and fury is easily aroused, leading to acts of violence and destruction.

Irritability.—Irritability is a condition which has to do chiefly with the affects of anger and rage. While observed in association with exaltation, as just noted, and among the prodromata of various insanities, it is particularly characteristic as a primary emotional state of congenital and acquired mental weakness, neurasthenic insanity, and the epileptic psychoses. In the latter it not infrequently becomes a true *furor epilepticus*. Irritability is occasionally noted in the convalescence from acute insanities, sometimes conjoined with a peculiar tearfulness, a lacrymose irritability. While most of the affects of both depression and exaltation are concerned with the ego, the affect of anger differs markedly from these in that it has to do with persons or objects outside of one's self. At the same time anger is a depressed emotion, but with certain peculiarities. In its influence upon the flow of ideas and upon action it first retards or inhibits, but finally, by an accumulation of stimuli, induces a sudden motor explosion, which may vary from simple aggressiveness to the most uncontrollable fury. Abbreviation of the usual play of motives is characteristic of the motor explosions of anger and fury. The sensory stimulus is carried directly into the motor areas, without the intervention of ideas or inhibitions, which accounts for the frequent occurrence of outbreaks of violence and destructiveness, followed by complete or partial amnesia as to the acts perpetrated.

Diminution or cessation of sensory and intellectual emotional tone gives rise to the condition known as partial or general *apathy*. A general apathy is frequently observed in neurasthenic insanity and in stuporous states, but it is more common in certain cases of melancholia. Such patients will complain, paradoxically as it may seem, of a painful feeling of having lost all feeling. They say that they feel no affection for their children, no hope of getting well, no pleasure in anything, no grief at the loss of friends, that their hearts are turned to stone.

Sometimes ordinary sensory feeling seems absent also, and they say they can feel neither heat nor cold, nor the pain of a cut or injury. One must distinguish between an apparent apathy and a want of attention consequent upon self-centering of the thoughts on strong delusions and hallucinations.

Partial apathy or limited defects of the emotions, as well as of special and ordinary sensation, are frequently encountered in various grades of congenital idiocy and acquired mental weakness. Defects of the higher forms of intellectual sensory tone, the ethical feelings, which we meet with in some of these cases, constitute the so-called moral insanity.

In certain psychoses a general apathy may be so great and the horizon of intellectual processes so narrowed that the condition amounts to a pseudodementia (Magnan), though there is truly no actual defect of intelligence, the mental functions being merely temporarily inhibited or suspended.

A peculiar mutability or *lability* of affects is not an infrequent phenomenon in insanity. Laughing and crying at the same time is not a rarity in persons who are not insane, being the result of the commingling of pleasant and distressing ideas present at the same moment in consciousness. The emotional pendulum swings quickly from one extreme to the other. Such disequilibration is particularly characteristic of hysteria, and is notable in the hysterical psychoses. But irritability and rapid alternation of cheerful and pathetic affects are also encountered in the most various psychoses. The chronic melancholiac with his sad face and automatically repeating his set phrase, "I am going to be killed," may laugh out suddenly at a funny incident and immediately relapse into his habitual mental attitude. In the same manner the paranoiac may forget momentarily his persecutory delusion. In general paresis this swinging from one emotion to the other in the most rapid manner is extremely characteristic. Mutability of affects is indeed most common in combination with conditions of intellectual defect or mental weakness.

DISORDERS OF THE IDEA-ASSOCIATIONS.

An idea-association is a psychological series, beginning with a stimulus and ending with a movement, between which may be one or two or more memory-pictures, some coming into consciousness, others remaining latent, but all associated by the nerve-fibers running between the ganglion-cells of the cortex in which are deposited the sensory impressions. The selection and serial course of ideas in the stream of thought are determined by fixed laws. One of these is the law of similarity-association—*i. e.*, a sensation induces an idea (seeing a flower gives the idea of a flower) and another latent idea is aroused by this (a rose) because the second memory-picture has marked similarity to the first idea—the rose is remembered or recognized. Every recognition contains a judgment, since a new sensation is seen to be like a former sensation.

Another law is that of simultaneity of reception—*i. e.*, memory-pictures are associated when their sensory stimuli have been received at the same time. For example, the sight of a friend recalls the city, the street, the house where one first saw him, and many others in a highly complex series of associations. Not all of these, however, will arise at sight of him. Perhaps it may be one or two, perhaps others; so that another factor arises—viz., the degree of associative relationship. Still another factor is the feeling (the intellectual sensory tone, the affect) combined with each of the memory-pictures. Those memory-pictures will rise soonest into consciousness which are combined with the liveliest emotions, agreeable or disagreeable, pleasant or painful. Ideas with strong affects have a greater chance in the conflict of ideas to rise up from their latency into consciousness. Still another feature of this scheme is that the latent ideas with their numerous associations influence one another reciprocally, some to excite and some to suppress or inhibit. While simpler ideas are arranged in a sort of serial association one after the other, on a higher plane the successive memory-pictures are bound together into judgments and conclusions. Ziehen cites the example of the simple judgment, "The rose is beautiful," in which we have not these ideas discreetly ranged one after the other, but the ideas "rose," "is," and "beautiful" stand in a thorough relation to one another. This form of idea-association is designated as a judgment-association.

The normal stream of ideas, or idea-association, has a definite swiftness which varies in different individuals and in the same individual at different times. In psychopathology we learn that agreeable or pleasant affects hasten and disagreeable or unpleasant affects retard the flow of thoughts.

The pathological disorders of the idea-association are to be classified as follows:

1. Disorders of memory.
2. Disorders of attention.
3. Accelerated flow of ideas.
4. Diminished flow of ideas.
5. Disturbance of the connections between the ideas of the idea-association (incoherence).
6. Falsification of the judgment-associations (delusions and imperative ideas).
7. Defective judgment-associations (weakness of judgment).

Disorders of Memory.—Recollection according to the principle of similarity-association is the calling up (by a sensation) of a memory-picture of earlier, similar, or identical sensations.

Recollection is disordered or destroyed by loss of the necessary memory-pictures, by any general marked retardation of cortical associations, and by dissociation of the idea-association.

Dissociation is equivalent to incoherence, and when a general incoherence exists, disorder of recollection is the rule. The patient then confounds persons and objects, and often loses the ideas of place and time (a condition for which *unorientation* is the best name). The

peculiar paramnesia observed in alcoholic psychoses, especially in the delirium accompanying alcoholic neuritis, is a striking example of this loss of orientation. The mistaking or confounding of persons and things depends upon illusions, delusions, incoherence of ideas, lack of distinctness of the requisite memory-pictures, or, finally, upon voluntary caprices of the patient. In alcoholic paranoia and epileptic insanities, and sometimes in other psychoses, we encounter the so-called "hallucinations of memory"—a bad term for the phenomenon experienced sometimes by normal individuals, of having seen this or that thing, or of having been in the same place before, although in fact the object and place are absolutely new.

Disorders of Attention.—Condillac stated that if amid a multitude of sensations there is one which predominates by its intensity, it is thereby transformed into attention. Ribot [1] regards spontaneous attention as always caused by emotional states. The writer believes, with Ziehen, that attention is never voluntary, but always spontaneous; that it is the awakening of one idea from the impressions of the innumerable sensations impinging on our sensory surfaces. Such attention depends upon several factors. One is intensity. Another is correspondence of the received sensation with some latent memory-picture. A third factor is the affective quality or sensory tone of the sensation. A fourth factor is the combination of latent ideas.

The disorders of attention are morbid diminution and morbid increase. The former is extreme in idiots, and noteworthy in patients dominated by strong hallucinations or overpowering delusions. By pathological increase of attention is meant the crowding of numerous sensations and ideas into consciousness, such as is observed, for instance, in maniacal states.

Accelerated Flow of Ideas.—In the highest degree of pathological increase in the stream of thought we observe not only a rapid concatenation of the associated ideas, but their swift transfer to the cortical motor areas, so that gesticulation, logorrhea, and motor agitation become strikingly prominent. It is an ideomotor excitement. It may be so severe as to present a secondary incoherence. In moderate degrees of acceleration the words spoken by the patient may, by their sound, arouse associations, so that we observe in the speech of the patient a tendency to riming, assonances, and verbigeration. The almost constant combination of augmented flow of thought with an exalted and cheerful mood is interesting and, at the same time, difficult to explain. Some believe that the exaltation is due to the patient's feeling of great facility and fecundity of thought. Others, again, consider the exaltation as the primary phenomenon, and that, as in normal individuals, the exaltation induces the free play of ideas. But it is probable that the cheerful mood and accelerated flight of ideas are simultaneous manifestations of the morbid process.

Diminished Flow of Ideas.—In this symptom we have features quite opposite to those manifested in ideomotor excitement. In the

[1] "The Psychology of Attention."

place of increased we have diminished attention to the sensory stimulus, and retarded transfer of the awakened idea-associations to the motor areas (motor inhibition). In any noteworthy inhibition of the flow of thought we observe also difficult and retarded recollection and more or less complete cessation of all voluntary movement. Speech becomes slow, the patient seeking laboriously for words, and these are simply whispered, not spoken aloud. In severe degrees only slight movements of the lips are made, or complete mutism is presented. Sometimes a word or phrase will be repeated monotonously over and over; a single motion of the arm or body may be reiterated for hours (stereotyped movements). The general musculature of the body may be completely relaxed and flaccid (motor-inhibition with resolution) or in a state of tension (catatonic inhibition), or in the condition known as *flexibilitas cerea*. The condition designated as stupor comprises three cardinal symptoms—viz., diminished attention, thought-inhibition, and motor-inhibition. Stupor may be primary or secondary. When secondary, it is ordinarily induced by hallucinations of ecstatic, dreadful, or imperative nature. Stupor from ecstatic hallucinations is frequent in hysteria and epilepsy, and from dreadful hallucinations in melancholia (catatonic syndrome). Primary stupor is another name for primary dementia.

Depression with thought-inhibition is common, and among the depressed affects associated with it we observe most frequently anxiety. According to the motor symptoms prominent in such cases, such as flaccidity (or resolution), catatonic rigidity, and restlessness, we distinguish three types—viz., melancholia passiva, melancholia attonita, and melancholia agitata. The usual motor inhibition is concealed in melancholia agitata by the expression movements of anguish, such as wringing the hands; picking the fingers, face, or scalp; restless moving to and fro, anteroposterior or lateral oscillations of the body, and the like.

In the diagnosis of thought-inhibition we must be careful to distinguish, in the first place, actual defects of intelligence or conditions of dementia. Then we must distinguish the primary form without affects and with affects, and the form secondary to hallucinations and delusions. Some of the diagnostic criteria are:

Dementia and idiocy are stationary or progressive conditions, while, on the other hand, in thought-inhibition there are transitory variations—intervals of diminished inhibition.

Thought-inhibition is almost always combined with motor-inhibition, while this latter symptom is not observed in defects of intelligence.

The judgment-associations in defective intelligence are also defective, and wrong answers are often given to questions. This is not true of states of thought-inhibition, where correct answers are generally made, if made at all.

Incoherence.—Incoherence is a dissociation of serially related ideas. Such dissociation may involve also the sensations which arouse a series of ideas and the motor sequence of a series of ideas. In a complete general incoherence, then, the patient recognizes neither persons nor objects, calls everything by its wrong name (pseudoparaphrasia),

uses everything wrongly (pseudo-apraxia), answers questions with absolute irrelevancy, and shows even incoördination and pseudo-ataxia in his movements. When the incoherence is marked in the sensory perceptions, we speak of lack of orientation; it was formerly termed a disorder of self-consciousness. When the motor incoördination is extreme, it may amount to veritable jactitation and pseudochorea. Incoherence is most remarkable, however, in the speech, writing, and mimetic expression of the patient. The gestures and facial movements have no relation to the contents of consciousness; laughter may accompany dreadful hallucinations and a tearful countenance some jocose idea. As regards speech, if the incoherence is of mild degree, only the sentences are misplaced; if of severe degree, the very words in the sentence are jumbled together, and we observe the phenomenon of verbigeration and the manufacture of new words. The handwriting of the patient may present the same incoherence as the speech. The term confusional insanity has been used to describe the form in which the symptoms are want of orientation, incoherence of ideas, and motor incoherence. Incoherence may be primary or secondary, generally the latter. As a primary phenomenon, it is the cardinal symptom of the incoherent form of paranoia. Secondary incoherence is due to extreme rapidity of the stream of ideas, to accumulation of rapidly changing delusions and hallucinations, to strong depressing affects, and finally to actual defect of intelligence. It is often difficult to distinguish primary from secondary incoherence, and far from easy to differentiate the causes of the latter.

Delusions and Imperative Ideas.—Ideas are associated with judgments as to similarity, simultaneity, properties of objects, etc., and such judgment may be correct or erroneous in normal individuals, according to the weakness or strength of judgment, and according to the degree of correspondence between the sensory perceptions and the objects or events of the external world. The normal mind, however, generally corrects its errors of judgment by repeated experience and better education—a physiological process. The pathological errors of judgment are the delusions of the insane. These delusions are usually judgments founded upon incorrect sensory impressions, such as illusions and hallucinations. They are rarely corrected by experience, as is the case with physiological error. But there are many cases in which a definite boundary-line can not be drawn between the delusions of the sane and those of the insane, as, for instance, in the delusions of the superstitious and of spiritualists.

The delusion is the most frequent form of pathological error of judgment, but the imperative idea is also a pathological error of judgment, though less commonly met with. Delusions are seldom influenced by, or, in fact, associated with, attempts at correction by the judgment; whereas imperative ideas are usually recognized as morbid by the patient, but force themselves into consciousness despite the efforts of the judgment to dislodge them.

A delusion may arise in the mind as a primary idea without an incorrect sensory basis, in the same way as an imperative idea. It may be a logical deduction from other delusions, or, as already stated, be the

product of illusions or hallucinations. It may be the result of a dream carried over by weakened judgment into the waking life. It may develop, as in melancholia or mania, from the attempts of a patient to explain the origin of his depression or exaltation. Thus, the melancholiac believes that his suffering must be due to his bad conscience, to some sin that he has committed, to some serious disease of his viscera, and the like. The patient with exaltation of his emotional life develops expansive ideas as to his strength, beauty, intellect, wealth, position, and so on. The character of delusions developed in the insane is as multiform as are the ideas in the mind of man.

Depressive delusions are almost always connected with the idea of having committed a sin, of having some disease (hypochondriasis), of having lost all property, or of persecution. Contrasted or antagonistic delusions of grandeur are sometimes observed at the same time in connection with depressive delusions. Thus, one patient, while weeping and wringing her hands, told me she was the queen of the world, but was unable to do her duty because she did not know all languages. Ziehen tells of a patient who said, "I was the Holy Ghost. Had I used my omnipotence, we would all be happy now. But I am cursed. I have killed the Holy Ghost. The whole world is in misery and dread through me." Hypochondriacal delusions generally arise from disorders of common or organic sensibility, cenesthetic sensory impressions, though they also develop from attempts at explanation of a depressed mood and from hallucinations. The patient is certain he has cancer, consumption, syphilis, brain-softening; that he is impotent; that his alimentary canal is closed up; that his brain has been removed; that his viscera and tissues have been metamorphosed into stone, glass, wood, and the like. A peculiar form of hypochondriacal delusion is the so-called micromania not infrequently observed in depressed periods of general paresis. Patients with micromania assert that whole viscera have been removed from their bodies, that their blood is all gone, and that they have been reduced in size. Thus, one patient told me she was so small she could be put into a pill-box. Another said his intestines were absolutely closed up and he should have to be cut open to have the obstacles removed. The delusion of pregnancy arises from perversion of abdominal sensory impressions.

The delusion of persecution differs from the other depressive delusions in that it has to do with the enmity of other persons in the environment, whereas these are concerned altogether with the ego of the patient, his own conscience, his own mind, his own body. The delusion of persecution is important to the general practitioner, because it is very common, because it is met with so often outside of institutions, because it not infrequently leads to assaults and murder, and because its significance in prognosis varies with the species of mental disorder in which it is encountered. It is observed, for instance, in toxic insanities which are curable; in melancholia, in which cure is difficult; and in paranoia, which is incurable. The most common origin of the delusion of persecution is from hallucinations. The patient hears mocking or threatening voices, he tastes poisons in his food, he sees lowering looks and

menacing gestures, he feels singular sensations in his body which must be due to irritant poisons thrown upon him or to electricity, or he smells noxious gases. The delusion of persecution may grow out of a series of hypochondriacal delusions, in the attempt of the patient to explain the origin of his miseries. It may arise also from the delusion of having committed a sin or crime, the patient imagining that every one hates him and follows him to punish him. Sometimes these persecutory delusions are referred to the influence of unseen agencies—hypnotism, telepathy, electricity, magnetism. Sometimes they have to do with the property or social position of the patient; he believes his belongings are being stolen, or his character maligned. Sometimes erotic ideas are bound up with persecutory ideas; a woman believes herself secretly cohabited with at night, or even by day, through occult means; a man thinks he is made impotent, that his seminal fluid is being drawn off. Obviously, these latter ideas often rest upon perverted sensory impressions received from the sexual organs. In seeking to discover the origin of the persecution, the patient often at first settles upon some one definite individual, but later, when he finds the methods of persecution innumerable and that his enemies follow him wherever he goes, he can not believe that any one person could do so much; he reaches the conclusion that it must be a wide-spread conspiracy, such as could be carried out only by some large affiliation of persons, such as societies of Freemasons, anarchists, Jesuits, lawyers, and police. The delusion of persecution occasionally develops from a delusion of grandeur; the patient believes he is persecuted because of his wealth or exalted position. More often, however, the contrary is the case, the patient coming to believe himself some extraordinary personage because of the persecutions to which he is subjected.

Another interesting form of depressed delusion is that of negation (*délire de négation généralizé*), which has its origin usually from an idea of having sinned. The patient thinks he must be the devil himself, his sin is so great; consequently he can never die, he must suffer forever; then, with the growing idea of the enormity of his sin, he comes to believe that God and mankind and the world exist no more.

Delusions of grandeur vary from simple, expansive ideas of the patient's importance, prerogatives, and powers, to delusions of being inventors, geniuses, prophets, reformers, titled and royal personages, and even Christ, God, and the mother of God. Besides his own personality, his environment may be vested with grandiose qualities—his room a palace, his straw hat a crown, pebbles diamonds, his children princesses, and so on. A peculiarity of the ideas of grandeur observed in general paresis, which is quite pathognomonic, is their enormity or, rather, monstrosity. It is not enough to be wealthy, but sextillions of planets can not hold the gold and jewels. It is not sufficient to have a dozen children, but billions of children are given birth to nightly by his innumerable wives. He will make a new Niagara, by bringing the Pacific Ocean over the Andes. Should sexual ideas prevail, he may say that his penis is a mile long, and his testicles are huge diamonds. He will move the asylum across the United States on a road of solid

gold. Such enormities betoken great weakening of the intellect and judgment.

Primary delusions conduce more to fixity than delusions secondary to hallucinations. The latter, depending as they do upon the stability or instability of the morbid sensory impressions, change with these. When delusions become fixed, they tend to crystallize or become systematized. Systematization consists of combining with the fixed idea complementary delusions in a more or less logical order or of the fantastic elaboration of the original delusion. The degree of organization and perfection of the delusional structure will depend upon fancy, logical faculty, social position, and education of the patient. The most common form of systematization is in the development of secondary grandiose ideas upon a persecutory basis. But almost any of the depressed and exalted delusions previously described may become fixed, systematized, and permanent through the life of the patient.

Delusions may have a retroactive effect in awakening sensory impressions, instead of being aroused by them—that is, may induce illusions and hallucinations. For example, the persecuted patient perceives voices, odors, tastes, pains, etc., often because of his mind being in a state of expectant attention.

Imperative ideas force themselves into consciousness in spite of the efforts of the patient—who recognizes their morbid character—to correct them. They are accompanied, almost without exception, by a depressive affect, a painful sensory tone. They are extremely common in neurasthenia. Senseless phrases or doggerel repeat themselves over and over in the patient's mind. The many varieties of phobia are familiar examples of imperative ideas in neurasthenics (agoraphobia, claustrophobia, mysophobia, etc.). Imperative ideas are also observed in melancholia and in a form of insanity which has been designated as insanity from imperative ideas. In very rare instances they are encountered in early stages of general paresis. They always develop on the basis of a congenital or acquired neuropathic or psychopathic constitution, and are apt to become obstinate features in the mental organization. Almost every imperative idea has its inception in some sort of sensory impression, and the idea may lead to compulsory actions on the part of the patient. But between the imperative idea and the consequent action there is generally a play of judgment, a faltering between the imperative idea and antagonistic or inhibiting concepts. For instance, the patient feels a compulsion to lock a door which he feels sure he has already locked. After an inward debate as to whether he should go back and assure himself that it is locked, which may last many minutes or longer, he goes to lock it, and on leaving the door again the imperative idea arises that it is not locked. The same play of antithetic ideas may occur in reference to anything—the addressing of a letter, the return of a book to a shelf, acts of dressing and undressing, the crossing of a street, etc. In some cases the imperative idea takes the form of compulsion to jump from a height, to laugh in unseemly places; or obscene and sacrilegious words, sentences, and fancies may thrust themselves obstinately into the consciousness. For

example, a gentleman, and a good Christian, came to me recently overwhelmed with the sacrilegious conceptions which first came to him at a church-service a week or two before—ideas of cohabitation with the Virgin Mary and filthy expressions in relation to Christ. A lady consulted me about a morbid fear that she had of canary birds. She could not enter a house or hotel in which there was a canary bird, because she was afraid that bird-seed might get about and in some way get into her mouth, be swallowed, and grow in her stomach. The contents of these imperative concepts are as varied as those of delusions, though they are almost, without exception, trivial or unpleasant.

Folie du doute is a form of mental disorder in which compulsory ideas assert themselves in the form of questions, religious, metaphysical, or in regard to the most trivial things or events (Shall I do this or that? Why is the table round? Why is the chair by the bed? Why are two and two four?). One young lady is so incapable of deciding any question that comes up in her mind that she does not know whether she ought to dress or undress, go to bed, eat, sleep, pray, or consult a doctor. Every trivial question of the day requires hours of painful and agonizing debate in her mind.

Imperative ideas frequently impel to compulsory speech and actions. Coprolalia is a not uncommon form of imperative speech in which the patient is impelled to the utterance of obscene words. Quite analogously the patient may be made to make grimaces, or may develop the so-called *maladie des tics*.

Weakness of Judgment.—Innumerable memory-pictures and associated ideas take part in the process of comparison and decision which we know as judgment. Hence any disorder of memory and of its associations, such as loss, defect, or perversions (delusions, hallucinations, or illusions), must naturally influence the character of the judgment. One of the common conditions which impairs judgment is, therefore, intellectual defect, such as congenital or acquired mental weakness. The criteria of idiocy and dementia are poverty of ideas and idea-associations and weakness of judgment. When delusions or imperative ideas exist, the errors of judgment are due to the overriding and eclipsing by single ideas and idea-associations of all others which would in the normal mind give balance, control, and revision to the judgment. Defective judgment varies in degree from a slight loss of the critical faculty to complete deficiency. When the judgment is markedly defective, it depends upon actual organic changes in the brain, such as we observe in idiocy, terminal dementia, senile dementia, and general paresis, and hence as a symptom it is far more ominous than delusions and imperative ideas, which usually rest upon a functional pathological basis. Its significance, then, demands a careful differentiation of this symptom from others with which it might be confused, such as incoherence and thought-inhibition. In incoherence the threads of thought are constantly lost. In thought-inhibition there are a depressive affect and extraordinary slowness of association with correspondingly tardy answers, and, besides, there are variations of depth of inhibition, so that at times complicated answers and judgments are

readily given. In actual weakness of judgment the judgments rendered are false, and the more incorrect, the more complicated the questions.

DISORDERS OF ACTIONS.

The actions or conduct of a patient depend directly and necessarily upon pathological elements in some part of the psychological processes —sensation, memory-pictures, idea-associations, and their emotional affects. They may be classified, following Ziehen, as—

1. Actions induced by sensory disorders.
2. Actions induced by disorders of memory.
3. Actions induced by disorders of the emotions.
4. Actions induced by disorders of the idea-association.

Actions Induced by Sensory Disorders.—Hallucinations and illusions affect the conduct of a patient often markedly, and their influence is always greater than that of normal sensations. Their dominance is the greater in proportion to their number and to the rapidity of their accumulation. Hallucinations gathered slowly in the course of weeks or months, while they may not be corrected, are at least subject to a certain amount of control by the inhibition of normal ideas. In the most chronic forms of hallucination the voices, common sensations, and visions tend to be ignored and to influence to a very slight degree the conduct of the patient. A very important practical feature in regard to hallucinations and their effects upon conduct is their uncertainty. They are never to be reckoned with, and one can never know what sudden violence or destructiveness may result from new hallucinations rising in the patient's brain.

Actions Induced by Defects of Memory.—These are observed in congenital or acquired weak-mindedness, where the conduct is directly ordered by sensory impressions, without that intervention of the play of motives which we observe in normal individuals. They are more like the actions of the lower animals, which may be complete enough in their way, but are not motived by complicated abstract conceptions, because these are wanting.

Actions Induced by Disorders of the Emotions.—As already elsewhere intimated, simple depressed emotions are accompanied by a general motor inhibition, and simple exalted emotions by a general motor agitation. But when the depressed affect attains to the degree of anxious dread, we may have a restlessness, a desire for flight, which in itself amounts to a motor agitation. This anxious state often leads to suicidal attempts, and even to homicidal assaults, arson, and other forms of crime and violence. The whole nervous system seems to be in such a state of tension that only an explosion can give relief.

In apathetic conditions action is reduced to its minimum.

Where the higher affects, which are at the basis of ethical concepts, are absent or lost, as in congenital or acquired states of mental weakness, crimes against person and property are common.

In conditions of anger and rage there is at first a brief period of

speechlessness and immobility, followed by an explosion of blind and violent motor excitement, in which the most dangerous assaults may be made.

In conditions of changeability or lability of the emotions, we observe analogous motor states—sudden changes from weeping and wailing to boisterous cheerfulness, and vice versâ.

A study of emotional expression is of particular diagnostic value in insanity, but the features of such expression and gesticulation are so well known that they need no detailed description here. Each mood, be it simple depression, anxious terror, excitation, anger, apathy, or emotional lability, has its own familiar motor habiliments.

Actions Induced by Disorders of the Idea-association or Stream of Thought.—Under this heading are gathered the multiform modes of action caused by increase in the flow of ideas, retardation of the stream of thought, incoherence, delusions, imperative ideas, and weakness of judgment.

In increased rapidity of the flow of ideas we note motor agitation or morbid impulse to movement, varying from simple talkativeness, with active play of expression, to loud garrulity, grimaces, gesticulation, busy walking about, running, dancing, and, in extreme degrees, to undressing, destructiveness of clothing, bedding, furniture, and blind throwing about of the body in every conceivable way. This so-called primary motor agitation should be distinguished from the motor agitation which is secondary to crowding hallucinations (hallucinatory agitation) and to emotions like terror and anger (affective agitation).

The behavior of the movements in regard to retarded flow of thought has already been briefly alluded to. There is a general motor inhibition, varying from simple slowness and difficulty of executing any movement, whether of speech or other muscles, to a complete cessation of voluntary movements, a stuporous or attonitous condition, in which the muscles may be absolutely at rest and flaccid or, on the other hand, in a condition of catatonic tension. In true catatonic tension every attempt at passive movement is resisted, but in another form of this there is a waxy flexibility of the muscles, so that the limbs yield readily to any passive motion, remaining in whatever position the physician desires to place them. Occasionally one encounters in cases of retarded idea-associations, as an expression of motor inhibition, a tendency to the repetition of some restricted voluntary movement in a rhythmical, stereotyped way for days, weeks, months at a time. Such stereotyped motions may be simple anteroposterior oscillations, lateral oscillations, whirling, walking to and fro or in a circle, waving the hands rhythmically—forms of tics exceedingly common in idiocy and imbecility, but common enough in melancholias and terminal dementias. The repetition of stereotyped or automatic phrases is analogous in character to such morbid movements. Motor inhibition is primary or secondary. The primary form is generally a simple resolution or flaccidity, occasionally a slight catatonic tension or *flexibilitas cerea*. Secondary motor inhibition is due to hallucinations, delusions, and states of mental weakness.

Incoherence of ideas leads to a dissociation also in the motor expressions of ideas, parapraxia, paramimia, incoördination, pseudo-ataxia, incoherent agitation, chorea magna, and jactitation. Such motor agitation may be primary or may be the secondary result of innumerable clashing hallucinations and delusions, rapidity of the flight of ideas or of intellectual defects.

Grandiose delusions exert their own peculiar influence on the demeanor and speech of the patient, according to the contents of the exalted ideas. We observe the proud bearing; the self-sufficient, haughty, or secret smile; the withdrawing from others; the tendency to decoration of the person; the attempts to act the parts of the personage he imagines himself to be; the striking peculiarities of handwriting. In some instances delusions of grandeur lead to homicidal, rarely suicidal, attempts (self-crucifixion with the delusion of being Christ). Grandiose erotic ideas sometimes occasion masturbation. Coprophagy and other filthy habits may depend upon grandiose delusions as to extraordinary virtues of the patient's excretions.

In depressed delusions, particularly as regards ideas of sin and poverty, we observe the characteristic melancholy facial expression and attitudes. Attempts at suicide are frequent, and sometimes self-mutilation. Abstention from food is especially common with the delusion of poverty, the patient feeling that he can not pay for anything.

Hypochondriacal ideas influence markedly the patient's actions and conduct. The hypochondriac may neglect every duty in the constant contemplation of his symptoms. He reads medical books, goes from one physician to another, takes to his bed perhaps permanently, and so on. The effects of hypochondriasis on motor functions are frequently remarkable, leading sometimes to astasia or abasia, or both; to hypochondriacal ataxia, tremor, or convulsive movements of the extremities. These hypochondriacal motor conditions are always the result of a series of morbid judgments on a hypochondriacal basis, and are to be distinguished from similar hysterical states which have an autochthonous origin without any antecedent conscious reasoning process.

The persecutory delusions lead to systems of self-protection of the most varied kind. Barricades, stopping up of cracks and keyholes, the wearing of peculiar clothing (silk, paper, etc., for instance, as a guard against electrical shocks), avoiding of food and drink which are suspected of containing poison, arming with weapons, frequent change of servants or residence, and complaints to the police or judicial authorities. Homicide is common in these cases.

Imperative ideas lead to imperative movements and actions, and generally in spite of the well-preserved consciousness and judgment of the patient. Such imperative actions are as various in character as the imperative ideas to which they correspond.[1]

Accompanying Physical Disorders in Insanity.—Among the

[1] The foregoing account of the psychopathology of insanity is largely a presentation of the views of Ziehen, to whose excellent work the author must refer readers for greater detail.

many somatic symptoms which may complicate or accompany psychoses are chiefly to be mentioned the following:

1. Motor disorders.
2. Sensory disorders.
3. Reflex disorders.
4. Trophic disorders.
5. Secretory and excretory disorders.
6. Temperature disorders.
7. Vascular disorders.

Motor Disorders.—These may be manifested in the form of morbid movements or paralysis. In the first category are assembled such symptoms as epilepsy, convulsions, chorea, choreiform movements, tremor, tics, ataxia, masticatory spasm, and the like. The following table, modified from Ziehen, gives a general summary of the paralytic symptoms noted in insanity:

Form of Paralysis.	Character.	Trophic Disturbances.	Spasticity or Flaccidity.	Sensory Disorders.	Deep Reflexes.
Hypochondriacal.	Usually limited to a certain form of movement.	No atrophy.	Flaccidity.	None.	Normal.
Hysterical.	Monoplegia, hemiplegia, or paraplegia.	Disuse atrophy.	Frequently contractures.	Hemianesthesias, etc.	Normal or hypertypical.
Cortical.	Monoplegia or hemiplegia.	Disuse atrophy.	Rigidity, contractures, local spasms.	Paresthesias, occasionally anesthesias.	Exaggerated usually.
Pyramidal tract.	Hemiplegia or paraplegia.	Disuse atrophy.	Spasticity, contractures frequently.	Occasionally anesthesia, hemianopsia, etc.	Exaggerated.
Peripheral.	Multiple or single.	True atrophy with degenerative reaction.	Flaccidity.	Hyperesthesias, stocking and glove areas of anesthesias often.	Lost.

Sensory Disorders.—Anesthesias and hyperesthesias have already been mentioned, but hyperalgesias and paresthesias of divers kinds are encountered among the psychoses, such as headache, migraine, neuralgias, feeling of fullness in the head, scotomata, tinnitus aurium, and so on. Neuralgia is occasionally a cause of insanity. Migraine is a frequent precursor of general paresis and concomitant of epilepsy. Lightning pains are noted in tabic types of dementia paralytica. Neurasthenic pains and paresthesias in the extremities, spine, and head are found in

neurasthenic forms of insanity. Where hysteria complicates a psychosis, there are often observed the sensory disturbances characteristic of that malady.

Reflex Disorders.—Changes in the reflexes are important in but a few forms of insanity. In paralytic dementia we observe nearly always exaggerated tendon-reflexes, but in tabic types they are lost. They are lost also in psychoses complicated with multiple neuritis, and frequently in cases with diabetes, and in morphinomania. The deep reflexes are exaggerated in senile dementia, many acute affective insanities, hysteria, epilepsy, and in patients with accompanying multiple sclerosis. The state of the superficial reflexes possesses little significance, except in insanity associated with hysteria and organic disorders of the brain, spinal cord, or peripheral nerves.

The Argyll-Robertson pupil is met with almost constantly in general paresis. The pupils in all cases of insanity should be examined as to their equality, size, and reaction to light, and in accommodation. Loss of reaction to light may be observed, besides, in general paresis, in syphilitic insanities, senile insanity, and in some alcoholic cases; it means organic disease of the brain. In rare instances a transitory rigidity of the pupil occurs in epilepsy and morphinomania. Inequality of pupils is very common in organic and occasional in functional insanities.

Trophic Disorders.—General disturbances of nutrition, variations in bodily weight, are commonly noted, and possess considerable significance. Thus, rapid increase in weight is characteristic of the progress of an acute psychosis to terminal dementia; if, however, it accompanies an improvement in mental symptoms, it betokens convalescence. In some cases enormous decrease in weight, in association with pernicious anemia, leads to a fatal termination. Certain forms of insanity, especially organic, notably paralytic dementia, present a remarkable trophic disturbance in the bones, a fragilitas ossium, inducing easy fracture. Decubitus is observed in bedridden insane patients, particularly paretics.

Hematoma auris, othematoma, or the "insane ear," is a deformity of the ear produced by a hemorrhage into the substance of the auricle, usually between the perichondrium and the cartilage. It is undoubtedly traumatic in its origin, but there is fundamentally some change in the vascular walls in certain cases of chronic insanity, rendering them fragile and easily ruptured by the most trivial pressure or injury. Such effusions of blood do occur in normal individuals (athletes and boxers), but always from severe trauma. The frequency of hematoma auris in general paralysis, and in many chronic forms of insanity is only explicable on the hypothesis of some trophic change in the vessel-walls.

Secretory Disorders.—The secretion of tears is generally reduced or absent in melancholia.

The saliva may be diminished in quantity in melancholia. More often in many forms of insanity it is increased, the excessive secretion amounting sometimes to a sialorrhea. The increase is due to constant mastication, to illusions and hallucinations of taste, and sometimes to

irritative stimuli in the secretory centers. Drooling may give the appearance of an increase of salivary flow, because of relaxation of the oral and buccal muscles, or because the secretion is not swallowed.

Diminution or increase of hydrochloric acid in the gastric juice is noted in many cases of insanity, and the quantity may be determined by the Sjöqvist method. Hypochlorhydria exists in common in states of congenital and acquired intellectual defect and in general paresis. Hyperchlorhydria is not infrequently met with in cardialgic attacks, after epileptic seizures, and in catatonic conditions.

As regards the *urine*, quantitative and qualitative changes are very common in insanity. These changes may be the expression of abnormal metabolism in the central nervous system, of abnormal metabolism in other parts of the body induced by disease of the central nervous system, or of vasomotor changes in the kidneys brought about by the psychoneurosis. Polyuria is observed in many organic psychoses and in hysterical complications. Oliguria is characteristic of melancholy and stuporous conditions. In hysterical insanity there is frequently an alternation between oliguria and polyuria.

As regards the qualitative changes in the urine of the insane, we are year by year recognizing more and more the importance of investigation in this direction. There is no doubt that the deeper our researches go into the chemistry of metabolism and catabolism, the nearer do we attain to a better understanding of the mysterious nutritional processes that have to do with the construction of the blood and that underlie so many psychoses. Albumin, peptone, and propeptone are found not infrequently in the urine of cases of organic insanity, in delirium tremens, in epilepsy, and in acute mania. Their presence is often transitory, and unaccompanied by renal disease. Hyalin cylinders are also often observed in severely excited conditions.

Excessive phosphaturia is noteworthy in many cases of great cerebral excitement, and after epileptiform and apoplectiform seizures. In chronic brain disorders the quantity of phosphoric acid is diminished below the normal.

The chlorids are lessened in quantity in melancholia. They are increased in the early stages of paresis, but diminish with the progress of the disease to dementia.

Sulphates and the aromatic ethereal sulphates (the latter being the product of destructive proteid metabolism) are increased in febrile conditions, and in conditions attended with much tissue-waste.

Urea is also representative of destructive proteid metabolism, and is an index of the general nitrogenous metabolism of the body. It is increased in conditions associated with tissue-waste, diminished in states of malnutrition. Uric acid and the urates have much the same relation.

Oxaluria (any increase above the normal amount excreted in twenty-four hours—viz., $\frac{3}{10}$ of a grain) is observed in certain nervous and mental disorders, but its precise significance still requires determination.

Urobilinuria and bilirubinuria have occasionally been noted in general paresis.

Glycosuria, with or without polyuria, has often been observed in various organic psychoses. It may be intermittent, transitory, or permanent.

Acetonuria is encountered in general paresis and epilepsy at times, as also in psychoses attended with malnutrition, as, for instance, melancholia.

Indican should be sought for, as it is an indication of albuminous putrefaction. It is significant of auto-intoxication.

There is a wide region open to the pathological chemist for discoveries in the feces, as well as the urine, of relations between metabolism and psycopathic disorders.

Menstruation is often disordered in insanity. Amenorrhea is the rule in acute psychoses of any form, due undoubtedly to profound changes in the general nervous system influencing the spinal centers for ovulation and menstruation. The cessation of menstruation with the onset of an acute psychosis is often mistakenly supposed by the laity to show some etiological relation between the genital organs and the insanity. The return of the menses is one of the early signs of convalescence from acute mania and acute melancholia. Naturally, it would not be correct to ascribe amenorrhea in all cases to simply nervous inhibition, because it may arise in all kinds of psychoses as the result of actual genital disease or of marked anemia.

Temperature-changes in Insanity.—The physiological oscillations of temperature are greater and more irregular in the insane than in normal individuals. In general, however, insanity may be said to run a non-febrile course.

Subnormal temperatures are frequently observed in melancholia, stuporous states, general paresis, idiocy, and occasionally in conditions of great excitement. In these last they are apt to indicate approaching collapse.

Hypernormal temperatures are found in many psychoses, sometimes from very slight peripheral irritations, such as retention of urine, gastric catarrh, constipation, mild bronchitis, decubitus, sometimes from organic changes in thermogenic centers. Hysterical complications may be associated with hysterical fever. Motor agitation in mania, acute paranoia, melancholia, and so on, may, if marked, give rise to febrile symptoms. The status epilepticus and convulsive seizures of general paresis increase the temperature, as a rule, to a noteworthy degree. Many writers have described diurnal oscillations of temperature, variations from day to day, asymmetrical axillary temperature, and general subnormal and hypernormal conditions of temperature in paralytic dementia; and some years ago, in association with Dr. Langdon, I undertook a verification of these statements at the Hudson River State Hospital for the Insane.[1] These are the conclusions we drew from a study of the temperature in twenty-five cases of general paresis:

1. As regards the average bodily temperature, we find it to correspond to physiological norms. The statements of our predecessors as to hyperpyrexic or subnormal averages can not be sustained.

[1] "A Study of the Temperature in Twenty-five Cases of General Paralysis of the Insane," "Journal of Nervous and Mental Diseases," Nov., 1893.

2. The diurnal oscillations of temperature in paretics also correspond to physiological norms. The statements to be found in literature as to extraordinary daily variations being frequent in these cases are absolutely erroneous.

3. Asymmetrical axillary differences are so small that they can not be considered as abnormal, and certainly not of any diagnostic significance.

4. When unusual variations of temperature occur in general paretics, their cause must be sought for in conditions not related to the pathological phenomena of paralytic dementia, but depending upon thermogenic features unrecognized by the physician, or "masked" by the mental state of the patient. Thus, in case two of our series, an increasing hyperpyrexia was noted during the second week's observations, but the pneumonia causing it was "masked" until the fifth or sixth day, the patient dying on the sixth day. Again, in case ten, where the highest single daily oscillation was 3.4 degrees, and the average daily oscillation for the week 2.2 degrees, the patient suffered from bed-sores, which undoubtedly produced some septicemia. That variations of temperature take place in connection with the paralytic and convulsive seizures of these cases we do not gainsay.

Vascular Disorders.—The action of the heart and vessels is often influenced by insanity. The pulse is subject to acceleration in excited and neurasthenic states, and to retardation in stuporous conditions. Variations in arterial tension are particularly noticeable at times; arterial spasm in any psychosis, but especially in melancholia, depressed types of general paresis, and in paranoia; arterial paralysis as a sequel to this. No doubt strong mental shocks and depressive or exalting affects are associated with anomalies of the vasomotor innervation. Perhaps many psychoses depend upon cerebral angioneuroses. The apoplectiform, epileptiform, and maniacal seizures of general paresis are believed to have their origin in these. Precordial anxiety, the neuropathic cervical globus, and other paresthetic and paralgesic sensations in the domain of the vagus, are also, in all likelihood, due to angioneurotic conditions.

CHAPTER IV.

EXAMINATION OF THE PATIENT; DIAGNOSIS; COURSE OF THE DISEASE; PROGNOSIS.

In most cases of insanity the diagnosis of the presence of a psychosis and also of the form is by no means difficult; but there are many in which this is not the case. Medicolegal cases especially require most careful and painstaking investigation in order to arrive at exact knowledge of their mental state. It is well to follow at all

times some fixed scheme of examination, and the writer advises the following:

1. Hereditary factors.
2. Pregnancy and parturition of mother.
3. Convulsions or other nervous disorders in infancy.
4. At what age did patient walk, speak, and complete dentition?
5. Degree and character of education.
6. Rachitis or febrile disease in childhood.
7. Character and temperament in childhood.
8. Period of puberty—Was its development normal?
9. Strength of sexual instinct at this period? Masturbation?
10. Occupation during adolescence.
11. Character, temperament, religion, physical condition, diseases during adolescence.
12. Sexual relations—excessive, illicit; marriage—venereal disease, puerperium.
13. Intemperance in the use of alcohol or drugs, overwork, shock, trauma to the head, infectious diseases, genital disorders.
14. Psycopathic constitution, previous attacks.
15. History of present attack.
16. Probable etiology.

Physical Condition.—1. Height, weight, nutrition, circulation, pulse, temperature.

2. Cranial measurements. } See chapter on Etiology.
3. Stigmata of degeneration. }

4. Condition of heart, lungs, alimentary canal, genito-urinary organs.
5. Reflexes, pupillary and tendon.
6. Condition of cranial nerves.
7. Motor symptoms—paralysis or morbid movement, gait.
8. Common sensory symptoms—paresthesia, hyperesthesia, anesthesia.
9. Special sensory symptoms—sight, hearing, smell, taste, field of vision.
10. Speech disorders—stammering, syllabic articulation, paretic speech, motor or sensory aphasia, agraphia, apraxia, verbigeration.
11. Sleep.
12. Expression, gesticulation, attitude.

Psychic Condition.—1. Mode of speech—accelerated, retarded, mute, incoherent.

2. Conduct—Does patient care for his person and dress? Does he attend to his ordinary duties? Is he excited and active, or depressed and quiet?
3. Illusions or hallucinations?
4. Mood—Is the fundamental mood depressed, exalted, irritable, changeable, apathetic?
5. Ethical feelings—What is the state of his moral conceptions and judgments?
6. Attention—Does the patient note what goes on about him, etc.?

7. Memory—Weakened or increased as regards long past and recent events. Test mathematical, geographical, and historical knowledge. Test dates, ages and names of members of family, the events of the past few days, etc.

8. Idea-association—Is there apraxia or parapraxia? Does the patient orient himself as to place, time, and objects and persons about him? Is the flow of ideas accelerated, retarded, or incoherent?

9. Judgment—How does he explain his own morbid condition and his relation to his surroundings? What does he busy himself with now, and what are his plans and purposes for the future?

10. Delusions and imperative ideas.

From the scheme just given, it will be seen that the study of a case of insanity, and the taking of the history of the antecedent factors and of the psychic disorder itself, involve much more elaborate attention than is the case with the ordinary physical diseases which one meets with in practice. In medicolegal cases we have to guard against several sources of error in our diagnosis, among which are the concealment of delusions by an actually insane patient and the simulation of insanity by a sane criminal. The forms of insanity usually simulated, because of the facility of so doing, are a maniacal state, dementia or stuporous melancholia, and epilepsy with insanity. Only one with excellent knowledge of the symptoms of insanity can simulate any form of psychic disorder so well as to defy the skill of the physician familiar with mental diseases.

In general practice it sometimes occurs that peculiar forms of delirium incident to severe visceral disease may be at first mistaken for insanity. Thus I have, on a number of occasions, been called upon to assist in the commitment of patients to asylums, where careful examination showed the existence of either a transitory delirium in association with an apoplectiform or other organic lesion of the brain, or a delirium from some such visceral condition as Bright's disease. Delirium of this kind is distinguished, first, by the discovery of the associated and causative organic disease, and, secondly, by the usual non-conformity of the delirium to any special type of psychosis.

Were I to formulate a series of rules to guide the examiner in his investigation of the mental condition of a patient, they would be somewhat as follows; yet it is to be remembered that these are not fixed rules, but subject to much modification by the tact, good judgment, and common sense of the examiner:

1. It is to be presumed that previous to seeing the patient the examiner has fully informed himself of all of the facts to be furnished by relatives or friends, and has, when possible, inspected letters and other writings, which so often prove fruitful sources of information.

2. Go to the patient as a physician, and not under the pretense of being something else—a device so often suggested by the family and friends.

3. Proceed to the physical examination of the patient, during which tactful questioning will determine the direction to follow in further inquiries.

4. Gain the good will of the patient by kindness and consideration.

5. Even if the patient is distrustful and uncommunicative, be politely persistent, and prolong the first examination, even to the extent of trying the patient, until the object is attained; for many patients will, when fatigued, finally yield to the friendly insistence of the examiner.

6. If one examination is insufficient, however, have as many interviews as are requisite for the purpose in view—a careful scientific diagnosis. In medicolegal investigations this is especially necessary.

Course of Insanity.—In all forms of insanity we should seek to divide the symptoms presented into primary and secondary classes, not only because of the interest of so doing, but because of the value of the division in the matter of diagnosis. For instance, in some cases we discover hallucinations and illusions to be the primary symptoms, and, in addition to these, we observe, as secondary symptoms, delusions, diminished attention, inhibition of thought, motor inhibition, and an anxious state; the condition is that of hallucinatory stupor.

Furthermore, we will divide insanities into acute and chronic forms, referring usually rather to the rapid or slow mode of onset than to the duration of the disease. But sometimes these qualifications are employed in connection with the duration of the insanity. Thus, it is customary in some asylums to designate mania or melancholia as acute for one year, at the expiration of which the term chronic is used. Remissions in insanity are periods of improvement or apparent recovery. Intermissions, or lucid intervals, are periods of complete recovery between attacks.

Mental disorders, owing to the delicate nature of the physical structures in which morbid changes take place, are prone to run a longer course than diseases of other than nervous tissues. It is true that transitory insanity and acute delirium may complete their course in a few days, and that acute mania or melancholia may recover in a month. But three to six months is a better average for acute mania and melancholia. Chronic insanities may last indefinitely, for, strangely enough, there seems to be little in these slow alterations of the mind to influence vitality. The average life of chronic lunatics in asylums is said to be some thirteen years, to which, no doubt, the regularity of life in institutions contributes. Many cases of marked chronic insanity last twenty, thirty, even fifty, years, and over.

In any given case of curable insanity, we usually discover, on examination, certain stages of evolution, prodromata, complete development, and involution or convalescence. Régis has devised charts which show diagrammatically the daily range of affects in cases of acute mania, acute melancholia, and circular insanity. In acute mania, for instance, we note a brief prodromal stage of depression, followed by gradually increasing maniacal excitement, then by gradual subsidence of the exalted stage to the normal line. He should have added before the normal termination an aftermath of a peculiar tearful irritability noticeable in these cases. An analogous reactive condition is observed near the termination of acute melancholia in recovery—a certain morbid cheerfulness.

Insanity terminates in recovery, in recovery with defect, in chronic persistence of the same symptoms as at first manifested, in secondary or

terminal dementia, or in death. Death often arises from exhaustion due to ideomotor excitement, and in organic psychoses from associated disease of the central nervous system, but, as a rule, death in insanity is not a consequence of the mental disorder, but of intercurrent or incidental disease, such as pneumonia, tuberculosis, etc. There is great variation as regards curability in the different types of psychoses. For instance, ninety per cent. of cases of simple melancholia and seventy per cent. of acute mania recover, while general paresis is invariably fatal.

Prognosis.—The prognosis will depend upon several factors, among which the most important are the type of insanity presented, the course, the character of certain symptoms, and the intellectual development of the patient.

As regards the type of insanity presented, affective insanities (mania and melancholia) are the most curable. Systematized chronic insanities (paranoia) and cyclical forms rarely recover. Organic insanities are nearly always incurable, if not fatal. In mania and melancholia, the acuter the onset and the more rapid and intense the appearance of the symptoms, the better the prognosis. Slow development and progress and partial remissions are unfavorable.

The etiology has considerable influence on prognosis. A transitory cause, like fright or anemia, is favorable. The older the patient, the worse the prognosis. Hereditary taint is not at all unfavorable as regards recovery from an attack of acute insanity, but very much so as regards the probability of relapse. On the other hand, a hereditary taint in insanity of slow inception is of serious significance. Alcohol and morphin, as etiological factors, influence prognosis unfavorably, because of the psychic degeneration they superinduce. Syphilis is not unfavorable if the insanity is due to direct specific disorders of the brain, but of bad import if due to the later, chronic, diffuse, specific alterations in the central nervous system.

Special symptoms, such as defect in the intellectual processes, systematization of delusions, primary delusions, paralysis, and convulsions, are significant of incurability.

The lower the grade of intellectual development in the patient, the greater the danger of termination in dementia.

CHAPTER V.

GENERAL TREATMENT OF INSANITY.

It is not so long a time since the insane in Christendom were believed to be possessed of devils and accursed. On the other hand, in certain parts of heathendom (among the Mohammedans) it was supposed that the souls of the insane had been removed early by God as a

special mark of favor, and that they were, therefore, blessed. Medieval treatment was founded upon the curious pathology just described. One portion of the world ducked, whipped, tortured, chained in dungeons, and occasionally burned, the insane. The heathen treated their insane, upon the whole, comparatively well.

After a time, many of the therapeutic measures employed by the Europeans of the middle ages were abandoned as unsatisfactory. But society still had to be protected; so the insane were fettered in the cells of jails and fortresses and solitary towers, until a realizing sense of the inhumanity of such treatment struck a responsive chord somewhere in the breast of a Tuke, a Connolly, a Pinel, a Rush, a Kirkbride, an Earle, and doubtless other, but unknown, immortals both before and after them.

Insanity thus gradually came to be looked upon as a disease, and not a penal offense, and, instead of prisons, special buildings were set apart for the particular custody of the insane. The great object of the asylums at first was to afford protection to society from lunatics, to protect them from themselves, and to provide for their care and support, when at public cost, in an economical manner. A hundred years ago, however, the asylum was still a species of jail, for its evolution had not yet proceeded far. Dungeons and iron chains and staples in stone walls and stone floors were still in use in many places. Indeed, it is scarcely over eighty years since Norris, a patient in Bedlam (Bethlehem Hospital), in the great Christian city of London, was kept for twelve years in a cell, with an iron collar riveted around his neck and iron bands and rings around his wrists, arms, and ankles, the neck being fastened to the wall and the leg to a rude box of filthy straw.

Asylums have, at the present time, come to be recognized as hospitals, and they are approaching nearer to that ideal every year. Occasionally, one finds among them some rudimentary appendage which is reminiscent of the embryonal stage of their evolution; but this is, fortunately, rare. The well-conducted hospital for the insane, to-day, is different from the asylum of years ago; the depressing, barren halls and wards and naked floors have given place to pleasantly furnished and carpeted, cheerful-looking parlors, sitting-rooms, and bed-rooms; muffs and strait-jackets have disappeared; the unintelligent attendant has, in many instances, given place to the trained nurse; every new means of treatment is carried out to the best of the ability of the asylum physicians; schools, employment, theatricals, music, and out-of-door walks are provided in the place of the old, deadly monotony, and, in fact, the asylum has gradually undergone a metamorphosis, until its character has completely changed. There are, to be sure, not many perfectly ideal institutions as yet in existence, but there are some which approach very nearly to it, as, for instance, that at Alt-Scherbitz, near Leipzig, and the new asylum at Rome, both of which I visited and described in 1887.[1] These are, of course, constructed on the cottage and pavilion plan, so arranged as to impress one as small colonies

[1] "Some European Asylums," "Amer. Jour. Insanity," July, 1887.

or villages, with separate buildings for those merely there for custody because of dangerous propensities, those brought there to be cared for kindly during the remainder of their useless lives, those who carry on various occupations, and, finally, for such as enter particularly to secure treatment for the brain-malady which has bereft them temporarily of their reason. The colony system of caring for the dependent classes—which the writer thinks should ultimately be adopted for all kinds of defectives—is well exemplified by the Craig Colony for epileptics in the State of New York.

I will say that I believe improvement and reform are constantly going on in asylums throughout the world; that no one is more anxious than are their superintendents to make progress in the care and management of the insane. They are rapidly reaching the best methods of dealing with the insane poor. If any are tardy in this advance, it is because they are so often hampered by the never-ending overcrowding of our public asylums, by the interference of politics, by the lack of money, by the want of a sufficient number of medical assistants, and by a multiplicity of official duties.

While these statements are undoubtedly true,—and great credit is due the asylum physicians of the present day for their strenuous efforts in behalf of their charges,—I believe that the ideal treatment of almost any insane person is to be sought outside of an asylum. After an asylum experience of some years, and an experience of many years, too, in private practice, I feel that I am in a position to judge fairly well of the relative merits of treatment in and out of asylums.

Theoretically, it ought to be the right of every individual in sickness to receive the best treatment that medical science affords; but this right can be enjoyed by very few. There are too many interfering conditions. Not every injured man is within reach of the best surgeon; not every fever-stricken one convenient to the best physician; and few are the deaf, the blind, the lame, those with crippled bodies and those with disordered minds, who ever really receive the best treatment that the world can give. The intelligent doctor and the scientific skill are not the only requisites. Other conditions are good nursing, the most suitable climate, the best hygienic surroundings, the best moral atmosphere. In dealing with affections of the body solely, there is often much to be desired; but it is particularly in the treatment of those who are mentally as well as physically afflicted that so much which should be done is left undone. The obstacles in the way of securing the best treatment are multiplied in the case of the insane by the dethronement of the supreme centers of psychic function.

Just as a hospital is a better place than a tenement house for a surgical patient or a case of fever, so is the asylum superior to the home in the caretaking of the pauper and indigent lunatic. The acutely insane of the poorer classes are best treated, at present, in our large public institutions; and those among the moderately well-to-do, either at home or in the small private asylums. Only the insane of the wealthy classes can, perhaps, enjoy and carry out ideal methods of treatment in their own homes, in country houses, or in foreign travel.

It is, of course, needless to say that there are many degrees of insanity; that there are hundreds of cases that are never obliged to go to an asylum at all; that in society are many insane persons carrying on legitimate occupations and caring for themselves and families; and that, on the other hand, there are cases for which nothing but commitment to an asylum would be suitable or feasible. But we should not send any patient to an asylum unless he needs restraint because of danger to himself or others, or because proper treatment and supervision are difficult in his home, owing generally to poverty or other insurmountable conditions. The sooner a case of acute insanity occurring in a pauper or an indigent is removed to an asylum, the better are his chances for recovery. This merely signifies that the earlier treatment is undertaken by those who are familiar with the management and care of the insane, the better for the patient. Early treatment by physicians of experience in psychiatry is demanded. At present this end is best attained by resort to the asylums of the neighborhood. But the writer has often called attention to the need of increasing and extending the facilities for the early treatment of the insane—a matter which can be accomplished in several ways.[1] The lines of progress in such direction are:

(1) The opening of special reception-wards or pavilions for the insane in general hospitals; (2) the establishment of psychopathic hospitals in large cities; (3) the creation of outdoor departments in connection with asylums situated in densely populous districts.

Before taking up the matter of the treatment of insanity, a few words should be said as regards

Prophylaxis.—Naturally, the question of the proper care and education of children with a tainted line or lines of ancestry often comes before the physician. Much can be done to ward off impending future evils by due and early attention to the mental and physical evolution of such children. One can not begin too soon to regulate the life of these little ones. The very milk of a weak and anemic mother may diminish the feeble resistance of a degenerate child. From the day of birth the prophylaxis must begin. The points to be observed in the effort to accomplish this are as follows:

1. Cultivate the body of the growing child. Develop him physically by careful and regular diet, regular hours of sleep, outdoor life, efficient systems of exercise.

2. Let his training be muscular rather than intellectual, manual training rather than lessons, especially in the early years of childhood. No schools until the age of seven or eight years.

3. The child with degenerate tendencies should be forbidden all nervous stimulants, such as tea, coffee, wines, beer, tobacco.

4. Seek to develop the resistance of the organism to all external stimuli, hardening his body by the daily morning cold bath, frictions, exercise, a hard bed, a cold sleeping-room; accustoming his mind to the courageous endurances of pain and mental stresses.

5. Guard well the epoch of puberty.

[1] "The Treatment of the Insane Outside of Asylums," "Phil. Med. News," March 11, 1893.

6. Let the occupation chosen for later years be also one for the muscles rather than for the mind, an outdoor rather than an indoor calling, a country rather than a city life.

Isolation.—On being called to see a patient suffering from insanity, the first point which arises is whether he should be sent to an asylum or not. This is generally a question of means. Isolation from the immediate friends is in nearly every case a requisite. If the patient belongs to the indigent or to the middle classes, isolation and the best treatment for his malady are only to be satisfactorily obtained in an asylum or hospital for the insane. Among the well-to-do, the needed isolation may be successfully secured in his own house, in an ordinary sanatorium, or by means of travel with a suitable nurse, companion, or physician. The kind of treatment best adapted to the nature of the case must be decided by the physician. The quiet of a private house in the city or country is best for some cases, while the tonic and stimulus of foreign travel are indicated in others. It may be stated that, when travel seems to be the prescription required, the greater the change from the environment in which the mental disorder developed, the better. The cities of Great Britain and the Continent do not differ essentially from our own cities, and patients should not be sent to such places with the idea of securing a change of environment. Norway in summer, Egypt in winter, and Mexico in either summer or winter, are regions which offer the greatest inducements in the way of tonics to the nervous system and stimulus to the mind, and all three are, at the same time, peculiarly restful and calmative.

If these methods of home, country house, or travel are for any reason impracticable, then the smallest private asylum that can be found is to be selected, for the fewer other insane persons and the greater number of sane persons the patient comes in contact with, the better will be his chances for recovery. There is a need for physicians in practice in the country who will be duly authorized and empowered by law to receive in their own homes and care for one such patient. The chief drawback in home-treatment, if long continued, is usually the bad effect of association with an insane person upon other members of his family, particularly if they be neuropathic. With a sufficiency of nurses and room, there is no contingency in the treatment of the insane that can not be guarded against. These being provided, the worst features in a case, such as violence, homicidal and suicidal tendencies, attempts at self-mutilation, etc., may be as well avoided outside as inside of an asylum. There are cases in which—though I am opposed to mechanical restraint in great measure—I should employ long-sleeved night-gowns, or even camisoles, rather than let them go from home before all means of cure had been tried at least for a few weeks' time.

The conditions and propensities that we have to combat are many. The choice of method must be the result of careful deliberation, and after judicial survey of all the features presented. We usually need the assistance of skilled and experienced nurses. Thanks to the asylum training-schools, there are numbers of such trained nurses of both sexes to be had in our large cities.

TREATMENT OF ACUTE CASES.

In acute cases, whether of mania or melancholia, it has been my experience that confinement to bed is a valuable factor in cure. Hence, on being called to such a case, I have the patient put to bed. Due precautions are taken as to the removal of all sharp instruments, weapons, drugs, cords, door-keys, and the like, and by a simple device the windows so arranged that they may not be opened beyond six inches; otherwise the furnishings may be left as they are without attention.

Insomnia and mental and motor excitement most frequently demand our best skill. In emergency, I am in the habit of using duboisin sulphate hypodermatically in the dose of $\frac{1}{100}$ of a grain, or sometimes hyoscyamin, or hyoscin hydrobromate in doses of from $\frac{1}{100}$ to $\frac{1}{60}$ of a grain hypodermatically, though these latter are not so satisfactory as duboisin. But for routine treatment of insomnia and maniacal excitement I much prefer hydrotherapy to drugs. In some cases the prolonged warm bath (70°–90° F.) for from one-half to two hours may be used, but in all cases the hot wet-pack is applicable. Sometimes when the wet-pack does not suffice to quiet fierce maniacal excitement, I use duboisin in addition, or give doses by the mouth of paraldehyd, trional, and sulphonal, all of which are valuable hypnotics.

In acute depressed conditions, on the other hand, opiates usually act best in cases in which hydrotherapy does not subdue the insomnia, distress of mind, and disordered nervous system. Among opiates, codein seems to offer advantages over others, and the contraction of a habit need not be feared. The aqueous extract of opium or morphin may be given hypodermatically.

The refusal of food is another element of danger. Acute insanity, besides rest in bed, quiet, and repose, needs overfeeding to balance the great waste of tissue going on in the system. While many cases of acute mania will eat and drink ravenously at times, from the nature of things their actions are uncertain, and the nurse should be instructed to feed the patient almost hourly and keep account of what is given. Milk, raw eggs, meat-juice, and occasional stimulants must, in extreme cases, be our chief reliance. Having an intelligent and assiduous nurse at hand, the necessity of feeding with a tube will only rarely occur. When required, the soft rubber stomach-tube may be introduced by the physician through the mouth or nose, a funnel attached, and the liquid mixture of the substances named allowed to flow in.

There are cases (some of the insanities of puberty and adolescence, and other forms) in which anaphrodisiacs modify distinctly the trend of delusions. There are cases in which intestinal antiseptics achieve noteworthy results; indeed, the instances are few in which attention to morbid states of the alimentary canal is not rewarded by considerable benefit to the mental condition of the patient. Arguments with patients upon delusions, more or less fixed in character, often has, despite the opinions of numerous alienists to the contrary, decided value in altering

their beliefs, and at times even eradicating their insane ideas altogether. It is true that occasional argument is generally of no avail. Such moral treatment must be sedulously and perseveringly employed, daily and for weeks or months, to insure success. Argument is a species of suggestion. The tactful and judicious physician will not make use of it in cases where it leads to irritation and would seem to be injurious.

The most important remedial agents employed in insanity are as follows:

The Rest-cure.—This has already been briefly referred to. It was in 1860 that Hilton began his series of lectures on rest and pain, in which he pointed out how much rest had to do with growth and repair of the bodily tissues, and fifteen years later Mitchell wrote of the value of rest in the treatment of hysteria and neurasthenia. Nowadays, however, we apply the principle of rest to a great variety of nervous disorders. Besides its indication in many cases of hysteria and neurasthenia, we find it of the greatest benefit in all sorts of nervous and mental troubles, and especially in such as evince a tendency to waste of tissue and to exhaustion.

Most cases of acute mania need to be treated by rest, which should be made as absolute as possible. Many cases of acute melancholia recover more quickly when confined to bed. While in many mental cases the rest should be absolute for a period of several weeks in order to insure a successful termination, it is astonishing how much benefit can be obtained by a modified rest treatment—that is, by merely prolonging the daily amount of repose in bed. The principle is to apply rest methodically, and in proportion to the degree of nervous exhaustion, strain, or irritation.

When rest is made nearly absolute, it is necessary that tissue metabolism should be encouraged by attention to the amount and quality of food, and especially by substitution of some passive artificial exercise for the active movements upon which the organism has hitherto depended. This is accomplished chiefly by massage.

Massage.—Massage was a favorite remedy and luxury in ancient Roman times, when it figured as the Aliptic Art;[1] so that it is not at all a new remedy, but its vogue in recent years has assumed enormous proportions, and it has received a scientific study and systematization to which the ancients were strangers. This rubbing, beating, and kneading of the trunk and limbs, when skilfully done, is an essential adjunct to the absolute rest treatment. It is invaluable in many kinds of pain, and it often surpasses drugs as a soother of irritation and an inducer of sleep.

Diet.—It is needless to say that in connection with a form of rest treatment simplicity should be the rule as regards food. The selection should be made from the point of view of easy digestibility, and foremost in this regard stand milk and its various preparations. Where milk can not be taken in its ordinary form, some more digestible preparation may be employed, such as peptonized milk, koumiss, matzoon,

[1] "The Aliptic Art: a Historical Study," by the author, "Phil. Med. News," Aug. 11, 1883.

or somal. In cases undergoing a rest treatment this is the main staple of food, and it should be given frequently and in considerable quantity. Overfeeding is indeed another principle in the treatment of any of the nervous and mental diseases in which exhaustion is a feature. Thus, absolute rest and overfeeding must be our chief reliance in acute mania, and in severe types of melancholia. Many cases require feeding every hour or two hours. Raw or soft-boiled eggs, rare or raw beef, specially prepared cereals, and sometimes green vegetables and fruits may be added to the diet. (By specially prepared cereals I mean simple boiled rice, stale bread in the form of toast, or, better, bread which has been twice baked—Zwieback). Stimulants are only occasionally indicated, and then especially in acute maniacal or other dangerously exhausting conditions.

A somewhat similar form of diet is appropriate for mental disturbances having a rheumatic or gouty diathesis as a basis. The same diet is essential in all cases of insanity, neurasthenia, epilepsy, and so on, which seem to depend upon auto-intoxication from fermentative or putrefactive changes in the intestinal contents, and such cases we find nowadays to be not at all infrequent.

Hydrotherapy.—When in 1893 I wrote a paper on "Hydrotherapy in the Treatment of Nervous and Mental Diseases" ("Amer. Jour. of the Med. Sciences," February, 1893), there was really no place in the city of New York to which one could send patients and have his own ideas as to treatment faithfully carried out; nor did I know of a single asylum for the insane in this country installed with hydrotherapeutic apparatus, such as I had seen in a number of asylums abroad, even in so remote a country as Greece. Now I could name many public and private asylums which are equipped with arrangements for this purpose.

Water affects the nervous in a variety of ways.

Cold baths increase and warm baths diminish the irritability of the brain and spinal cord in a reflex manner by stimulating the sensory and vasomotor nerves of the skin, thus influencing the cerebrospinal circulation.

Short cold baths, especially when combined with sprinkling, showering, or rubbing, are powerfully stimulating, exhilarating, and tonic. Cold baths stimulate peristalsis and the visceral reflexes in the cord, and increase blood-pressure. Prolonged warm baths, steam and hot-air baths, and the hot pack are relaxing, fatiguing, and tend to induce sleep. Warm baths diminish arterial tension and reduce the irritability of individual nerves and the whole nervous system. The spinal douche is of the greatest service in many nervous disorders, because of its remarkable tonic, revulsive, and derivative effects. It is a powerful mental as well as physical stimulus. By means of various nozles it is ejected in the form of a strong stream up and down the back of the patient for a few seconds only, at a distance of some ten feet. Patients with good reaction do not need any special preparation, but at the beginning it is well to have the patient take a warm bath or stay a few minutes in a hot-air box previous to its application. At the first

séances the water should not be too cold. Later, it may be gradually lowered to 50° F. It should be taken every day, when possible. Occasionally this cold spinal douche is alternated with a hot douche (the so-called Scotch douche). This is an exceedingly successful procedure in many cases of hysteria, neurasthenia, and in lethargic and hysterical forms of insanity, where there are sluggish intellect, great depression, apathy, stupor, catalepsy, etc., and in any case of nervous and mental disease where anemia, chlorosis, or gastric trouble exists.

In insomnia there is no other remedy so generally efficient and at the same time so innocuous. I have seen it successful in wakefulness from every kind of cause, and in cases seemingly intractable to other remedies. There are two hydriatic procedures for the production of sleep. One is the prolonged warm whole bath, at a temperature of 70° to 90° F., for from one-half to two hours just before retiring. This is indicated in mild cases of insomnia. But the hot wet-pack is more effectual and more widely applicable in all forms of sleeplessness, whether in nervous or insane individuals. It is applied in this way: A blanket, nine by nine feet, is spread upon the patient's bed, and upon this a sheet, wrung out dry after dipping in hot water, is laid. The patient lies down upon this, and the sheet is at once evenly arranged about and pressed around the whole body, with the exception of the head, after which the blanket is also immediately likewise closely adjusted to every part of the patient's body. Other dry blankets may now be added as seems necessary. The patient remains in this an hour or longer; all night, if asleep.

I know of no better treatment of acute maniacal conditions, for instance, than rest in bed, overfeeding, the hot wet-pack, and the occasional employment of some sleep-producing agent.

Treatment of Auto-intoxication.—Researches in the physiological chemistry of digestion, as well as observations in many pathological conditions, have established that auto-intoxication from the absorption of poisonous substances generated in the alimentary canal by putrefactive and fermentative processes is not only a real thing, but a frequent factor in the etiology of a number of nervous disorders, such as headache, neurasthenia, hysteria, neuralgia, and even graver maladies, like epilepsy, melancholia, mania. It behooves us, therefore, in these diseases, to investigate carefully for evidence of any such cause. Periodical or constant attacks of gaseous diarrhea are somewhat indicative of this condition. Frequently the condition of the bowels furnishes no information of the actual state of affairs. Recent researches tend to show that an excess of ethereal sulphates in the urine (indican) in connection with other symptoms is a good index of auto-intoxication.

When auto-intoxication is suspected as the causative factor in any nervous disorder, it is essential to regulate the diet in the manner already mentioned, and there are at our disposition a number of intestinal antiseptics which, though not always efficient, are yet often of very great benefit. I have found, in my own practice, that beta-naphtol is one of the best intestinal antiseptics. I give it in capsules of five grains each, two hours after eating, with water. In several cases

of epilepsy and of melancholia it has acted exceedingly well. In many cases of epilepsy salicylate of soda has also proved itself of great value. Salol, too, is a good intestinal antiseptic. Sometimes I have made excellent use of peppermint for the same purpose. I think the abundant use of water a necessary adjunct in the treatment, usually advising the drinking of hot water several times daily on an empty stomach, and sometimes adding thereto frequent flushing of the large intestine with warm water.

Electrotherapy.—General faradization with a current sufficiently strong to contract the muscles has much the same value as massage where the rest-cure is employed; it exercises the muscles and stimulates metabolism. Over and above this it has a tonic effect. Galvanism is only of use in complicating conditions, such as neuralgias, sciatica, and the like. The same is true of the static and sinusoidal currents. Electrization of the head for the purpose of influencing illusions, hallucinations, and delusions is occasionally of service, but doubtless its influence is almost wholly of a suggestive nature. However, it is not to be interdicted on that account, for suggestion is in itself a valuable therapeutical adjunct, and so good a method of increasing its usefulness as is afforded by electricity is not to be slighted. Suggestion is a species of psychic therapy.

Drugs.—The narcotics are of great importance in the treatment of insanity. Among these, opium and its alkaloids easily stand first.

Opium, morphin, codein, all have a hypnotic effect, but their especial value lies in their sedative influence upon mental hyperesthesia, anxious states, etc.; in their contraction of the blood-vessels, and in their stimulation of the nutrition of the central nervous system. The hypodermatic use is best. They are particularly indicated in melancholia, acute alcoholic psychoses, and hallucinatory paranoia, very seldom in maniacal states. They are contraindicated in most maniacal conditions, collapse, fatty heart, uncompensated valvular disease, and marasmus. The patient should not know the name of the drug used. Opium and codein are preferable always to morphin, because of less danger of forming a habit. The doses must be gradually increased. The constipation at first present during the administration of opiates disappears later.

Hyoscin, hyoscyamin, and **duboisin** are isomeric alkaloids, and have much the same qualities and are alike in their effects upon the organism. Next to the opiates they form the chief drugs of the alienist's armamentarium. Their great value lies in their sedative influence upon motor centers. They are used hypodermatically in doses of from $\frac{1}{100}$ to $\frac{1}{16}$ of a grain. Almost immediately after injection the muscles become incoördinated and weak, and in ten or fifteen minutes the patient sinks into a light slumber which lasts from six to eight hours. The peripheral arteries are contracted, giving the patient a striking pallor; the breathing is slowed, the pulse retarded or made intermittent, the throat rendered very dry, and the pupils enlarged and accommodation paralyzed. These drugs are contraindicated in heart disease, and in no case should they be continued any length of time.

Precious as they are on the right occasion, their employment should be subject always to the careful and judicious supervision of the physician.

Another feature of their physiological action to be borne in mind is their power to induce dreadful hallucinations in a well person—a fact which emphasizes the need of care in administering them to an individual whose mind is trembling in the balance. Long-continued use of these alkaloids interferes with nutrition.

From what has been said of the action of these drugs, it will be seen that their effectiveness is most manifest in conditions of motor excitement, in mania, agitated melancholia (combined with morphin), in agitated dementia, and in the motor excitement of epilepsy or paresis. I have often been able to feed excited patients who refused food, immediately after the injection of the alkaloid, during the few minutes that elapse before the advent of sleep.

The **bromids**, aside from their particular value in epileptic psychoses, are often useful in other forms of mental disease, owing to their effect in diminishing cerebral activity and reflex irritability. In epileptic insanities the combination of the bromids and opium is especially effective. They are of use in any mental excitement which is conjoined with some reflex irritability (illusions and organic sensations, uterine and genital disorders). As an anti-aphrodisiac they are employed in insanity with erotic manifestations. In large doses, sixty to ninety grains and over, they act well as a safe and innocuous hypnotic.

Chloral hydrate is not so much used as formerly, though its hypnotic effect resembles very closely natural sleep. It is applicable to acute hallucinatory conditions, insanities associated with chorea, and in the epileptic psychoses. In status epilepticus, per rectum it is one of the most valuable remedial agents. In some conditions, combinations of chloral with morphin are of much utility. Chloral is a heart poison, and its use is contraindicated in cardiac and vascular disease. Chloralamid is of little value.

Paraldehyd is a simple hypnotic whose utility is not sufficiently appreciated. Naturally, its bad taste and the rather disagreeable odor left upon the breath have limited its sphere of usefulness; but it has no bad influence upon the heart or nutrition. It can be given in heart disease, and patients seem to thrive and grow fat upon it. The dose is from one-half to two drams, but increasing doses are necessary, and I have had patients who have taken four or more drams at a dose. It is especially useful in conditions of inanition and in insanities founded upon hysteria or neurasthenia. The taste and odor of the drug can be concealed in orange-water or weak brandy. Amylene hydrate is of less value; it stands between chloral and paraldehyd.

Trional and **sulphonal**, as simple sleep-producing agents, are preëminent where nothing but sleep is the object to be attained. Trional acts quickly, sulphonal slowly; hence a combination of the two in equal doses is particularly fortunate in its results, inducing, as it does, rapid and prolonged slumber. Five to ten grains each, or more if indicated, may be given at bedtime with a glass of hot milk. The tastelessness of these drugs affords the possibility of administering them without the knowledge

of the patient, mixed with salt or sugar, or spread with butter upon bread. Sulphonal used for a long period produces muscular weakness and incoördination. Both of these agents may, after a time, give rise to some disorder of the alimentary canal. They are said to occasionally increase the intensity of auditory hallucinations.

Moral Treatment.—Psychotherapy is among the most important means of treatment of insanity. The general practitioner is especially concerned with it in the early stages of mental disorder; later, if the patient is turned over to the care of the asylum, it is still of the utmost importance, and the physicians in institutions know well the necessity and utility of moral agencies in effecting a cure or in at least ameliorating the condition of their charges. Physicians who have much to do with ordinary functional nervous disorders—hysteria, neurasthenia, mild depression, and hypochondriasis—are familiar with the wonderful influence they are able to exert over the mental attitude of patients thus afflicted, by kindness, patience, firmness, interest, and sympathy. Everything they say or do, if rightly said or done, conveys a suggestion, inspires hopefulness, increases the efficacy of their prescriptions, points out the way to health and a new lease of life. The insane also are in the same way dominated by the personality of the physician and of those chosen to carry out his instructions. Some physicians are fortunate enough to possess peculiar gifts in this way, and their influence is potent for incalculable good. Aside from this personal influence, the physician is called upon to direct and regulate the entire disposition of the time of the patient and to make for him the environment suitable to his malady. He prescribes isolation from friends, the care of strangers, the rest-cure, the periods and kinds of exercise, the mental and manual occupations, the amusements, all of which go to make up psychotherapy. Some of the principles of this moral treatment we will now briefly touch upon.

The value of isolation in melancholia and of the rest-cure for both acute mania and melancholia has already been mentioned. There are cases of melancholia, however, in which a modified rest-cure is better than the complete rest-cure. In such cases, after recumbence in bed from six in the evening until noon the next day, much of the afternoon may be spent in simple exercise, such as walking slowly about out-of-doors. It is best not to seek, by amusements, visits of friends, and other cheerful devices, to raise the melancholiac from his depression, for usually these attempts rather add to his misery by force of contrast. A neutral atmosphere, so far as the emotions are concerned, is best, though an occasional word of confident reassurance is useful.

In acute stages of insanity it is best not to discuss the hallucinations and delusions of the patient, although neither physician nor nurse should ever fall in with or act upon his erroneous ideas. Whenever good judgment suggests, a brief but positive denial of the truth of the imaginings of the patient should be made. Later on such correction may with advantage be made more frequently and constantly.

When the patient is not taking a rest-cure, occupation of some kind is essential to his progress toward recovery. Most useful are all forms

of muscular or manual employment, for labor of this kind keeps the attention more or less fixed upon what is being done, the flow of ideas is checked and limited to a considerable degree, and the mind is prevented from concentrating itself upon illusions, hallucinations, and delusions. Moreover, muscular exercise is an outlet for superfluous energy; motor excitement is reduced by it; tissue metabolism is accelerated; and when the work is over, the organism gains all the more readily a certain composure of mind and repose of body. Out-of-door occupation is best—garden and field work for men, garden work for women; walking, bicycling, etc., for either sex. Among indoor employments we have ordinary housework, drawing, knitting, sewing, embroidery, carpentry, wood-carving, etc., all of which employ the muscles methodically. In certain cases mental occupation is useful, though it should be of the simplest kind. For instance, during my practice at the Hudson River State Hospital for the Insane, we found much value in the establishment of a regular country school, attended by patients of all ages. We had "spelling bees," copying lessons, reading aloud, blackboard exercises, geography, simple arithmetic, singing, and so on.

A very important point in the management of the insane is never to practise deception upon them in any way. Be absolutely truthful in every statement to them. Never remove a patient to an asylum under the impression that it is a hotel or sanatorium. It is better to state exactly what is going to be done, and then use force in the removal, if necessary.

Hypnotism has been frequently practised upon the insane, in the effort to modify hallucinations or delusions, rarely with any definite success, occasionally with ill results, and generally with no effect whatever.

There are a few conditions among the insane which require particular treatment or management. Among them are:

Suicidal Tendencies.—Suicidal patients are among those who require constant watching and the removal of every means of self-injury. This is often difficult in treating such patients in their own homes. How difficult, it may be conjectured from the fact that, even in asylums, with all their safeguards, suicide is by no means infrequent. Thus, forty-eight patients in the asylums of the State of New York committed suicide between October 1, 1888, and September 30, 1896.

Suicidal patients are to be watched night and day, and kept in bed, and even put in restraint, if desperate. I have known a patient to strangle herself with a cord while lying in bed under the eye of a nurse. Another, broke a small piece from a china plate and tried to cut her wrists under the bedclothes. While suicide is most common among melancholiacs, patients with general paresis, paranoia, epileptic psychoses, and toxic delirium sometimes attempt it. The physician attending such patients should see to the guarding of windows and the removal of keys, hooks, scissors, weapons, drugs, strings, long pins, matches—in fact, of all instruments and means which he may suspect to be utilizable for a suicidal purpose.

Refusal of Food.—The acutely maniacal often can not be made to take sufficient nourishment, because they do not stop long enough in their ideomotor excitement to permit of eating. The watchful and persevering nurse can generally, by persistent effort, induce the patient to swallow a considerable quantity of liquid food (preferably in a metal or heavy china cup, because the patient frequently knocks the vessel from the hand of the nurse). Such patients can often be fed, as already stated, immediately after a hypodermatic injection of hyoscin or duboisin before the supervention of sleep.

Other patients refuse to eat because of delusions of poverty or poisoning, suicidal proclivity, or simply from absolute distaste.

Where ordinary means fail, the nasal tube should be resorted to,—one of large caliber with rubber funnel attached,—and through this, once or twice daily, a mixture of a pint of milk, two or three raw eggs, a little meat-juice, and, if needed, brandy, may be introduced.

Before resort to this means nutritive enemata may be employed (three raw eggs, a half-pint of milk, a half-pint of water, and a little meat-juice).

I have been in the habit of delaying the use of the nasal or stomach-tube to the last moment of safety, even for several days, rather than subject the patient to the excitement of its employment. It is only in rare instances that feeding is not effected in some other way before the use of the tube becomes imperative.

Violence and Destructiveness.—Hypodermatic medication and hot wet-packs are indicated in periods of excitement with tendency to violence and destructiveness. It has already been intimated that active physical labor or exercise is a safety-valve for patients with proclivities of this kind. Isolation in an empty room with protected windows is sometimes resorted to in institutions, and abroad the padded room is a favorite place for patients whose violent jactitations may lead to serious injuries to himself. The padded room consists simply of a room lined as to walls and floor with cushions. Mechanical restraint is used in the last extremity, when chemical restraint and other means have failed. The camisole and safety-sheet are employed only in cases with desperate suicidal tendencies, proclivity to excessive masturbation, great violence and destructiveness, and where needed to keep in place surgical dressings, splints, etc. In asylums mechanical restraint has been nowadays almost entirely abandoned.

Masturbation.—Masturbation is more often the consequence and concomitant of insanity than its cause. It may be ameliorated occasionally by drugs like bromids, camphor, and lupulin. Cold baths and hard physical labor are more successful in combating this habit. In excessive masturbation, constant watching day and night or the use of mechanical restraint is necessary. The use of blistering fluids on the genital organs is only of temporary service. There are instances in which the habit is so fixed and so uncontrollable—for example, among some imbeciles—that surgical interference would be quite justifiable (castration, clitoridectomy, ovariotomy, section of the pudic nerves, ligation of the vas deferens).

CHAPTER VI.

MANIA.

Definition.—Mania is a form of insanity characterized by emotional exaltation, acceleration of the flow of ideas, and motor agitation. It is probable that the elated mood and the hyperexcitation of intellectual processes are both primary and simultaneous in their development. The motor excitement results from the conversion of the swiftly flowing ideas into acts.

Etiology.—There is no special etiology for mania—what has been said in the chapter on General Etiology has application to this form. It may be said, however, that mania is ordinarily a disorder arising between the twelfth and twenty-fifth years; that it is more common in females than in males; that individuals of sanguine temperament are most liable; and that it is, upon the whole, rather an infrequent type of insanity. Hereditary taint is found in seventy-five per cent. and degenerative stigmata in twenty per cent. of cases. The percentage is larger for the periodical form.

Mental Symptoms.—An outbreak of mania is preceded by a period of depression lasting from a few days to a few weeks, sometimes as long as two months. This prodromal stage is characterized by a general feeling of malaise, vague uneasiness, and hypochondriacal complaints, accompanied often by headaches, cephalic paresthesias, constipation, loss of appetite, sleeplessness, and some loss of flesh.

When the true mental disorder begins to manifest itself, the sorrowful mood begins to give way to an exalted condition, which the patient looks upon as a state of renewed health and well-being. He takes a renewed interest in everything, and becomes unusually cheerful and talkative. The degree of increasing exaltation varies much in different cases. In mild cases the patient begins to surprise his intimates by his loquacity, facetious remarks, jocularity, and by his rather immoderate actions and undertakings. He enters upon many new schemes; makes innumerable calls upon friends and acquaintances; writes numberless letters; purchases unnecessary articles; and is inclined to excessive indulgence in tobacco, wine, and venery. There is considerable mobility or lability of the emotions, so that the elation may readily pass into conditions of anger or tears over trifles. In more severe types all of these symptoms are aggravated. A veritable chaos of ideas throngs through his mind, and the effects upon movement of this crowding series of ideas amount to a constant motor agitation. The patient laughs, declaims, sings, shouts, makes grimaces, dances, runs about, and becomes destructive and filthy, all inhibitory idea-associations ceasing to have any influence over the rioting torrent of thought. In still severer grades we have the picture of an acute delirium, boisterous incoherence, a motor agitation attaining to violent jactitation, and an actual and considerable increase of temperature.

The patient with mania is fundamentally optimistic and egotistic. Everything about him is rose-colored. He feels rejuvenated; rejoices in his health, strength, and vitality; is delighted with the vivacity of his ideas and the untrammeled virility of his intellectual processes. His general and special sensibilities are ordinarily unaffected; in only about one-fifth of the cases are illusions and hallucinations present, and these are almost always limited to vision. Occasionally there are illusions and hallucinations of taste and touch. Illusions of the special senses are more frequent than hallucinations. The manias of extreme youth or age and alcoholic mania are especially prone to manifest hallucinations. Mania marked by the presence of numerous illusions and hallucinations is often designated as hallucinatory mania.

The accelerated flow of ideas in mania is naturally most conspicuous in the speech of the patient, which varies from garrulity to logorrhea. In the milder degrees of loquacity we are still able to follow the sequence of associations. The sentences are often bound together by the ordinary relationship and connections of ideas, but among which many latent ideas spring into consciousness and expression; and, again, the sounds of words spoken suggest others of similar sound, giving rise to rimes and assonances. Thus, the sight of the physician may suggest drugs, a certain apothecary, in a special street, in some familiar town; and the town may in turn give rise to another series. On the other hand, the physician's "How do you do?" may invoke a string of assonances (verbigeration) commingled with sentences expressing their associated ideas—shoe, two, new, grew, blue, crew, etc. But in the more striking grades the logorrhea is so pronounced that it is impossible to find clues to any association, whether of sound or idea. It becomes a chaos of words, consequent upon an actual dissociation of the ideas in the rushing stream of thought—a secondary incoherence. The entire loss of inhibitory control of ideas is especially shown in the absolute lack of modesty, in the tendency to the employment of vulgar and obscene words and expressions. This profanity and obscenity become all the more astonishing by contrast, when it is observed, as it often is, even in the most refined and cultured of women.

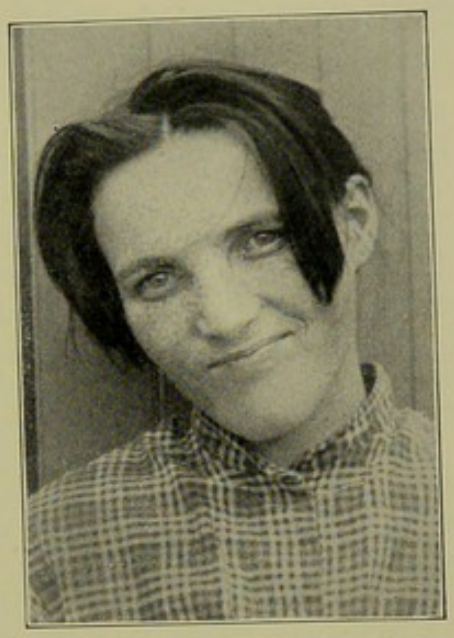


Fig. 270.—Mania (puerperal in origin).

The attention of the patient with mania is extraordinarily increased, so that the most insignificant trifle in his environment does not escape him. But this very increase of the power of attention, combined as it is with an unpausing stream of ideas, entails an absolute lack of concentration. His attention can not be held a moment. The patient's memory, too, seems preternaturally intense, and it is remarkable how,

after recovery, he may remember all the details of his delirious activity with great distinctness. Indeed, the patient, in the midst of the chaotic turmoil of his mind, often recognizes, as if he stood apart from and judged himself, the very madness of his fancies and acts. The judgment-associations are, in fact, normal.

The elated mood and rapid flow of ideas give rise to delusions of expansive character, mostly in regard to strength, beauty, and intellectual powers, but often also in relation to wealth, social position, etc. In severe cases there are the most marked delusions of grandeur, the patient affirming himself or herself to be a prince, president, king, queen, Christ, the bride of Christ, the mother of God, etc. A peculiarity of these affirmations is their transitory character, their impermanence. A patient will, in the same breath, call himself a millionaire, broker, and king, and in the next a minister of the gospel and railroad magnate. If sharply told by the physician to stop such nonsense, he will often say it was only a joke, or he had said such things for fun. This shows very well the latent consciousness of the patient of the true state of affairs.

The sexual instinct is morbidly exalted, giving rise in both sexes to immodesty and obscenity of speech and manner, and often to sexual excesses and masturbation.

The actions of patients with mania correspond in character to the degree of acceleration in the stream of ideas. When this is very great, turbulence, violence, and destructiveness are common, not with any homicidal or suicidal intent, because they are incapable of acts requiring any particular concentration of mind or reflection, but simply as the result of uncontrollable automatic impulsions.

Sleeplessness is characteristic of this condition. General sensibility appears to be benumbed, probably because of the want of concentration of thought. Patients seem insensible to changes of temperature and to severe pain. Such a state often masks the most serious disorders, like pneumonia or the pains of labor. I once made an autopsy upon a woman suffering from acute mania who died suddenly. She had been for days in the wildest uproar of mind and body. The cause of death was an acute peritonitis from rupture of a perforating duodenal ulcer. The peritonitis had evidently existed for several days, yet this painful affection had clearly had no effect upon the course of the mental and motor symptoms.

Some cases of mild maniacal character exhibit a peculiar tendency to logically explain and excuse their insane acts, and this type is often designated as reasoning mania.

As already stated, mania begins with a prodromal stage of depression. After the exalted stage has culminated and at the beginning of convalescence, a reactive stage of depression is presented, characterized by irritability, sensitiveness, and lacrymosity. This stage of depression may be so intense as to be an actual melancholia of simple nature or accompanied with stupor. In instances of this kind the possibility of the patient's having a circular form of insanity, instead of a simple mania, is to be considered.

Physical Symptoms.—Except in the severest type of mania (acute delirium) the bodily temperature runs a normal course, sometimes even showing a subnormal character. In acute delirium the temperature may reach 104° or 105° or more. The pulse is small and normal, or but slightly increased in frequency in mania. There are no paralyses, no true anesthesias. The absence of fatigue is often surprising. The deep reflexes are exaggerated, as a rule. The salivary secretion is frequently increased. Perspiration is diminished and sometimes transformed in character, so as to give a peculiar and often extremely disagreeable odor (kakidrosis). Gastric disorders are nearly always manifested, and the tongue is heavily furred, frequently dry. In severe cases albuminuria, propeptonuria, and hyalin cylinders are frequently found. The general bodily weight diminishes during the progress of the disease, but rapidly increases with convalescence. There is a corresponding condition of the appetite, an anorexia during the early stage and until the culmination; then an increase of appetite amounting often to bulimia. The face is sometimes slightly suffused, but, as a rule, marked by a yellowish pallor. As the patient emaciates this becomes more noteworthy, and at the same time the features become pinched and sharp and the eyeballs sunken. This outline and color of the face, with a tendency to dryness of the lips and a heavily furred and dry tongue, are indications of the progress of exhaustion.

Varieties.—According to the intensity of the manifestations, upon the basis of the course of the disease, from the nature of certain concomitant symptoms, and, fourthly, in relation to some of the etiological factors, mania is frequently divided into several varieties bearing some special qualification. I have already alluded to mild and severe degrees of mania,—*mania mitis*, *mania gravis*, and *acute delirious mania*,—which shade off gradually with many intermediate stages from one into the other. I have also mentioned *reasoning* and *hallucinatory mania*, which owe their names to peculiarities in the symptoms. It is customary to speak also of *acute*, *subacute*, and *chronic* mania, the first two designations referring especially to the rapidity or slowness of onset, the last qualification to the duration of the insanity in its maniacal form for a year or many years. The word chronic does not mean incurable, for cases of chronic mania of long standing not infrequently recover. The term *transitory mania* was formerly employed to describe a delirious condition of very brief duration, a few hours or a day or two, but these cases do not really present the characteristic symptoms of a true mania. *Periodic mania* is a form in which attacks of mania follow one another with perfectly normal but generally irregular intervals of days, months, weeks, or years. The attacks themselves last from a few days to a few months. Usually the prodromal depressive stage is absent, the culmination rapid, and convalescence seldom marked by the interesting depressive affects of ordinary mania. The periodic attacks are very apt to be distinguished by the presence of special symptoms, such as a reasoning tendency, tendencies to impulsive acts, arson, stealing, assaults, sexual and alcoholic excesses, and to severe headaches. The longer periodic mania endures, the less distinct become the normal features of

the intervals. *Recurrent mania* and *intermittent mania* are only other names for periodic mania. Various etiological factors give rise to such designations as epileptic, alcoholic, morphin, puerperal, senile mania, etc., in some of which the mania takes a special color from its cause. Thus, the toxic manias are generally acute hallucinatory conditions.

Pathology.—The most careful investigations of the central nervous system have thus far discovered no pathologico-anatomical basis for mania. The theory still prevails that there is a condition of congestion of the higher brain-centers underlying the manifestations of mania, but this theory lacks the support of observed facts. We are, therefore, constrained to look upon the disorder as functional in its nature, as due to a morbid change in the nutrition of the cells, in the way of deficient or perverted metabolism.

Course of the Disease.—Mania terminates in recovery, death, secondary dementia, secondary paranoia, or chronic mania.

Fig. 271.—Chronic mania.

Recovery takes place in some seventy per cent. of cases. Sometimes it is exceedingly rapid, but usually the progress is gradual and rhythmical to the normal state. This rhythm is a sort of oscillation between good and bad days, but with constant improvement. Occasionally the patient improves steadily and uninterruptedly until recovered. Recovery is sometimes not perfect, so that we speak of it as recovery with defect.

Death takes place in but five per cent of cases. The cause of death is sometimes exhaustion, as in acute delirium; more often an intercurrent affection, such as pneumonia, nephritis, and the like. Heart disease and alcoholism add greatly to the danger of lethal termination.

Dementia is the result of the disorder in about one-tenth of the cases. The degree of dementia varies from a slight diminution in some of the higher qualities and powers of the mind to pronounced mental enfeeblement with vestiges of the antecedent mania and complete confusion and incoherence. The vestiges of the antecedent mania are commonly in the form of motor agitation, and occasionally hallucinations and rudimentary delusions of exalted character.

A *paranoia* secondary to mania is met with in rare instances, perhaps once among a hundred cases. In such termination we observe a tendency to the systematization of some of the original maniacal delusions.

Chronic mania is quite as rare a condition as secondary paranoia. By

this term is meant a continuance of the typical maniacal symptoms for a long period of time—a year or many years.

It must be remembered, too, that an attack of acute or subacute mania may be merely the beginning of a periodic mania or of a circular insanity.

Diagnosis.—One must be careful not to confound delirium from fever with an attack of acute mania. Except in acute delirious mania, the absence of fever in the mental disorder should be distinctive. The three cardinal symptoms of mania should be kept constantly in mind—viz., the exalted mood, the accelerated flow of ideas, and the motor excitement. We must determine whether these are primary or secondary to hallucinations and delusions, and whether the syndrome is complicated by other conditions, such as general paralysis and alcoholism. A very mild degree of mania may pass unrecognized, unless it is possible to diagnose it from a pronounced change in the character of the individual and from the accompanying insomnia. The physical symptoms and the defect of intellect should suffice to distinguish the exalted stage of general paresis from an acute mania. The delusions, too, of paresis have a peculiar monstrosity of character that differentiates them from the exalted ideas of the maniac. Sometimes, however, there will be difficulty in making a speedy diagnosis between these two analogous exalted conditions.

In acute hallucinatory paranoia we may encounter the three emotional symptoms of acute mania, but on examination these will be found not to be primary in their origin, but secondary to the hallucinations. In the epileptic type of acute hallucinatory paranoia defects of memory are distinctive.

Subacute types of mania may resemble congenital states of mental weakness, in so far as excesses, moral delinquencies, etc., are concerned. Here, too, intellectual defect and the early history will serve to differentiate the condition of congenital feeble-mindedness.

We can never determine from a single attack whether we have before us a form of periodic mania or circular insanity. It is only the succession of outbreaks and the cyclical character that can serve us here.

Prognosis.—Some of the prognostic data are apparent from what has gone before. In the main the outlook is favorable, since so large a percentage of the cases recover. After six months have passed the prognosis becomes only half as good, and after two or three years is quite unfavorable. There are exceptional instances of recovery after many years. The younger the patient, the better the chance for cure. A second or third attack may be recovered from completely, if they be merely recedival attacks; but if they indicate a periodic insanity, the outlook is unpromising.

Treatment.—What has already been said in the chapter on General Treatment is applicable here. The requisite isolation and supervision of a patient with acute mania can seldom be satisfactorily accomplished outside of an asylum, unless his means are sufficient to secure the needed nurses and suitable surroundings.

Rest in bed aids in the prevention of exhaustion, and renders super-

vision, care, and feeding more easy. To induce sleep and allay motor excitement, hydrotherapy and the hypodermatic use of hyoscin, hyoscyamin, or duboisin are extremely valuable. In mild cases, equal parts of trional and sulphonal are preferable to the drugs just mentioned. Paraldehyd is also an excellent hypnotic for mild cases.

Overfeeding is also an extremely important indication. Liquid and easily digested foods are to be recommended. The bowels should always be regulated. Brandy is added to the liquid food when exhaustion is imminent, but otherwise stimulants are contraindicated. Should there be danger of collapse, the repeated hypodermatic injections of ordinary salt and water (ten to fourteen ounces) over the abdomen or in the thigh are valuable. In the depressed period of convalescence small doses of opium are often useful.

CHAPTER VII.

MELANCHOLIA.

Definition.—Melancholia is a mental disorder characterized by a primary depressed mood associated with retarded flow of thought, and either motor inhibition or, in some instances, with an agitation expressive of anxiety and apprehension.

Etiology.—Heredity is encountered in fully one-half of the cases. Inheritance of the same form of psychosis is strikingly frequent as regards melancholia. Females are more often affected than males, almost in the proportion of two to one. Heredity, physical ill-health, and mental stress together form a triad of factors which are responsible for most cases of melancholia. This psychosis is observed at any age. At puberty it is commonly associated with excessive masturbation. Love-affairs, with the novel stresses incident to such emotions, may be an exciting cause in adolescence. Pregnancy, especially in primiparæ, is a not infrequent cause, owing to the emotional strains which are frequently clustered about this physiological commotion. The melancholia of pregnancy generally begins about the third or fourth month. Prolonged lactation may cause melancholia by inducing a general debility and anemia. The parturitional period of the puerperal state does not produce melancholia so often as gravidity and lactation. The psychoses of parturition are more commonly of the nature of acute hallucinatory paranoia. The melancholia of the climacteric is due to the physiological commotion incident to this period of involution and to associated ill-health and mental strains. In old age melancholia is often associated with senile involution and nutritional changes in the central nervous system from cerebral endarteritis. Homesickness is a frequent cause of melancholia. Auto-intoxication undoubtedly plays a considerable rôle

in the development of melancholia. Occasionally severe forms of agitated melancholia are associated with chronic alcoholism. It is said that northern races and people inhabiting mountainous regions are especially subject to melancholia.

Mental Symptoms.—The affective state in this psychosis varies from simple dejection, in which every thought and everything in the environment of the patient has a sorrowful color, to a state of profound depression, in which the patient is either paralyzed by the dreadful nature of his concepts or thrown into a state of agitated suffering associated with marked precordial distress. There are many degrees lying between these extremes. This morbid depression is in many ways paralleled by and analogous to the conditions of normal grief in which we observe a varied behavior of different individuals under the influence of distressing emotions; some become strangely quiet and still; others, again, make noisy and agitated demonstrations of their grief. Normal grief, too, is often accompanied by sensations of choking and of sinking at the heart, which are similar but comparatively mild manifestations of the precordial anxiety and dread of the psychosis. We observe often in melancholia a rhythmic oscillation of the state of depression during the day, and frequently from one day to another. Thus, the depression is at its height in the morning (when suicidal tendencies not infrequently present themselves), being followed by a recession with another exacerbation toward night. Very often patients sleep better on alternate nights, and manifest intenser emotional depression on alternate days. In some cases, presenting what is known as the apathetic form of melancholia, the patients complain that they have no feeling at all; that they are affected neither by things cheerful nor grievous, pleasant nor painful; that they have no longer any love for family or home, or interest in anything; that they can never be sad or glad again. Sensory disturbances are often absent. In the apathetic variety there may be analgesia. Marked illusions and hallucinations are observed in only about a tenth of all cases of melancholia. Where they are present in great number, the psychosis is designated as acute hallucinatory melancholia. The paresthesias in the region of distribution of the vagus are neither illusions nor hallucinations, but they may give rise to delusions; they depend probably upon vasomotor disturbances. The melancholiac perceives and identifies ordinary and special sensations slowly and with difficulty. The peripheral stimuli of his environment go unnoticed. When hallucinations are present, they usually affect most of the senses, and are terrifying and dreadful in character. The patient sees the flames of hell, phantoms, and ghosts of dead persons; hears voices which

Fig. 272.—Acute melancholia passiva.

reproach and threaten him, or the sounds of machinery and other tortures which are being prepared to cut him up or mutilate him ; smells and tastes horrible things, and so on.

Next to the affect of depression, the most noteworthy symptom of melancholia is the slowing of the thought processes. This is the antithesis of the accelerated flow of thought noted in maniacal conditions.

The processes of memory are retarded, and the attention of the patient difficult to gain. A minute or several minutes are required for the answer to the simplest question. Sometimes no answer is given at all, or at most the lips stir inaudibly.

The contents of the concepts may, in milder degrees, show no delusions. More often the patient attempts to explain his feeling of abject misery and distress either by the presence of some fancied physical ailment (hypochondriacal melancholia, with delusions of having syphilis, consumption, cancer, impotence, incurable disorders of the stomach, bowels, etc.), or as the result of some sin of his past life. To the delusion of having sinned an especial color is given by the character of the patient's early education. Thus, a strong religious bias gives rise to delusions of having committed the unpardonable sin, of being doomed to hell, to everlasting punishment, to be buried alive, etc. Often such delusions are connected with some trivial error of his past life. For instance, a patient of mine recently told me, "I once chloroformed a dog to death and buried him. I think now I made a mistake in not making positively sure that the dog was dead, and as a result I am doomed to be buried alive also, and to be tortured with dreadful thoughts through eternity, each day the torture growing more dreadful, up to the decillionth power of intensity."

Patients often say they are not sick, they are only wicked. They have committed sins not only against God, but against society. Not only must they undergo the punishment ordained by Heaven, but they must answer to man for infringements of human law. They are to be put in prison, to be killed, to be hung. Thus they come to delusions which are somewhat similar to persecutory ideas in that they believe the officers of the law are after them, etc. These differ, however, from the true persecutory delusions in which patients have no self-depreciatory ideas, but believe themselves to be the innocent victims of inimical conspiracies. Delusions of poverty are very common, and especially so in senile melancholia.

The conduct of the melancholiac depends upon the contents of his consciousness. In his expression we note the lines of extreme depression, or of fear and terror. The patient with the delusion of sin or poverty, for example, presents motor inhibition. He sits in one place with head bowed down, unmindful of what goes on about him, indifferent or apathetic to all questions put to him, resisting every attempt to give him food or medicine, or to dress and undress him, or to give him exercise. He is lost in the contemplation of his misery. Another patient, with these or similar depressed ideas more accentuated, or with marked hallucinations, will wring his hands, tear his hair, walk or run up and down, bewailing his misfortunes, or seeking to escape the

dreadful fate in store for him. In the first case the motor inhibition may be so complete as to make the patient perfectly immobile, so that not a single voluntary movement is made ; even micturition and defecation are involuntary. Such immobility is generally of flaccid character, but sometimes it assumes the phase of rigidity, a waxy flexibility, or a

Fig. 273.—Catatonic symptoms in various psychoses (melancholia, general paresis, circular insanity, primary dementia, etc.) (photograph loaned by Dr. Atwood, of Bloomingdale).

spasmodic resisting rigidity (catatonic rigidity). Catatonic symptoms have been noted in other forms of psychoses, but the disorder described by Kahlbaum under the name catatonia is really a form of melancholia. Suicidal tendencies are observed in every type of melancholia, but especially in those with precordial distress and agitation. In the milder

degrees, an attempt at suicide is often the first intimation to friends of the actual existence of insanity, since in these cases, outside of the sorrowful mood of the patient, the intellectual processes may go on as before. Cases of melancholia attonita (with marked motor inhibition) also often make attempts at suicide, unexpected explosive attempts, the result of the sudden letting up of mental and bodily tension. This has been called the raptus melancholicus. Homicidal attempts and violent assaults are occasional in melancholia. A melancholy mother kills her children to put them out of an unhappy world. Or a sudden dangerous assault is made as an explosion of motor tension. Hypochondriacal melancholiacs may mutilate themselves. Patients with melancholia have also been known to enter upon alcoholic excesses to drown their misery; this is especially observed in periodical melancholia. The refusal of food is almost the rule of conduct in all forms of melancholia. Sometimes this refusal rests upon a delusional foundation: the patient thinks he can not digest his food, that it never passes through him, that he is too poor to pay for it, that he is too wicked to eat, that he must do penance, and so on. Or he refuses food with deliberate suicidal intent. Generally, profound anorexia, constipation, and gastro-intestinal disorders are at the basis of this refusal to eat.

Fig. 274.—Chronic melancholia passiva.

Physical Symptoms.—The pulse is usually subnormal in frequency, though sometimes, especially in agitated forms, accelerated. The peripheral arteries are contracted and the extremities cold. The respiration is retarded and superficial, as a rule, though it may be increased in the agitated types. Sleep is much disordered, and even altogether absent, in severe cases. The patient emaciates both through refusal of food and because of disordered digestion. The gastric juice and saliva are often diminished in quantity. The tongue is foul and furred, and obstinate constipation is present. As a result of constipation, elevations of temperature may be observed, but otherwise the temperature is undisturbed. The surface temperature in the extremities is often much reduced. Amenorrhea is frequently induced by melancholia as well as by mania.

Varieties.—As in the case of mania, we distinguish *acute*, *subacute*, and *chronic* forms of melancholia; acute and subacute according to the degree and rapidity of inception, chronic from the duration.

Melancholia passiva is a term used to describe the cases with great motor inhibition of the flaccid order.

Melancholia attonita designates the type with motor tension and rigidity.

Melancholia agitata is a name used for melancholia with motor excitement.

Acute hallucinatory melancholia is the form accompanied by numerous illusions and hallucinations.

Hypochondriacal melancholia is melancholia associated with delusions as to physical maladies.

Raptus melancholicus is a phrase employed to describe the furious outbreaks of violence toward the patient himself or others, on the sudden cessation of mental and motor tension.

Catatonic melancholia,[1] already alluded to, is not a distinct type of mental disease, but simply a modification in the course of melancholia. It has often been considered as a special form of psychosis, and many alienists have argued pro and con. the question of its being a clinical entity. It is a very rare syndrome. A perfectly typical case is the following, observed by me in the Hudson River State Hospital:

CASE I.—B. R., female; age thirty-one; married, with four children; Hebrew; common education; born in United States; admitted to the Hudson River State Hospital in February, 1884; no heredity.

The first evidence of mental disturbance was in August, 1883, after the birth of her last child, which she nursed for two months, when she became sleepless, restless, and inclined to refuse food. Soon she developed the idea that she would never recover, began to bemoan her condition, and said it was hard to die so young. There was complete anorexia. She took no interest in anything, became careless of her person and dress and negligent of everything in which she had formerly been interested. Three weeks before admission she became suicidal, spoke of it, and attempted to choke herself and to cut herself with glass. She would bite her caretakers, and took every means possible to make away with herself. Her menstruation was regular. There was considerable constipation. The case was regarded as one of puerperal melancholia.

February 11th, two days after admission, she tried to beat her head against the bedstead; said some one was killing her children and putting them in a box; said arsenic was put in her coffee and that her mother was in the asylum; was sleepless and had to be fed forcibly. She became rapidly worse during the next few days; went into a condition of noisy excitement, calling for her mother, whom she believed to be in the building; mentioned her delusions of poisoning, beat and bruised herself against the bedstead, and refused all food. She was very suicidal. Her mouth and tongue became dry; she showed symptoms of exhaustion and was fed with the tube for a considerable period. She continued to refuse food, to resist all care strenuously, and to be desperately suicidal until March 15th, when she became cataleptic, with marked flexibilitas cerea; absolutely silent; noticing nothing, not even her husband, who visited her; would swallow food put in her mouth; made no voluntary motions; pulse good; bowels moved by enemata, but began to wet and soil the bed, and as she grew stronger was looked upon as rapidly becoming demented. This state of catalepsy continued, with variations

[1] "Catatonia," by Frederick Peterson, M.D., and Charles H. Langdon, M.D., "Proceedings of the Amer. Medico-Psychological Assoc.," Baltimore, 1897.

from time to time, for a month or more, when she began to be destructive of her clothing, would strip herself naked, and was filthy in her habits. She remained in that condition, seldom uttering a word for months, until about the last of November, 1884, when she began to cry out loudly, "Bring me home to my children in New York. Bring me home to my children in New York," reiterating this over and over from morning until night, and accompanying the phrase with rhythmic movements of the hands and arms as if she were waving them in the direction she wished to go. There was a rhythm in the days, too, for every alternate day she was quiet in her chair and would whisper. This continued without variation for some two months, during all of which time she was eating and sleeping well and gaining in flesh.

About the middle of January, 1885, her verbigeration took another character, the gesticulations remaining the same. She began to recite all day long, every other day, with great rapidity and with infinite variation, in rimes of unintelligible words, as follows:

"Moccasins,"	"Tabies,"	"Jobis,"
"Voccasins,"	"Gabies,"	"Chobis,"
"Doccasins,"	"Habies,"	"Sobis,"
"Crockasins,"	"Sabies,"	"Pobis,"
"Lockasins,"	"Labies,"	"Tickater,"
"Tockasins,"	"Mabies,"	"Fickater,"
"Jockasins,"	"Kabies,"	"Sickater,"
"Hockasins,"	"Nobis,"	"Lickater,"
"Babies,"	"Gobis,"	"Mickater,"

and so on, *ad infinitum*. She only changed to another word when the possibilities of rime were exhausted.

She was mentally confused. When asked why she made these rimes she said some one told her to; but this was probably an answer given because she could not explain why, for she had now no hallucinations or delusions. She was so confused that she did not feel sure it was her husband who came to see her.

A few months later she gave up the riming assonances and returned to the old phrase, with occasional variations, "I want to go home to my children in New York." "Won't I be glad when I get home to my children in New York." "What good times I'll have when I get home to my children in New York . . . to my cosy home in New York . . . when I get into the car which takes me to my husband and children in New York." This was the refrain for many months on alternate days, accompanied as before with rhythmic gestures of both arms in the supposed direction of New York. In the spring of 1886, on the quiet, alternate days, she began to sew. She steadily improved in flesh and was looked upon as in a state of dementia. There was no appreciable change in her condition during the summer. The verbigeration and gesticulation alternated with quiet and industrious days until the autumn of 1886, when improvement began to manifest itself in every way, and in November she was discharged as improved and went home with her husband on trial. There she recovered perfectly so that not a vestige of the insanity remains, and she is to this day

in full charge of her household and family, as reported to us not long since by her husband.

In this case we have, first, an ordinary suicidal melancholia, with delusions of poisoning, the killing of her children, etc., and hallucinations of taste and hearing, and possibly sight, rapidly becoming an aggravated case of melancholia agitata of almost maniacal character, with a sudden lapse into a cataleptic condition lasting about a month, after which she was for some months silent, stupid, having to be dressed, undressed, and cared for in every way, when she began to show symptoms of verbigeration and rhythmic gestures previously described. During most of the long period presenting these symptoms she was mentally confused, but her mood was rather cheerful. She would frequently smile when any one asked her why she talked in that way, and she seemed to take pleasure in what she was constantly reiterating.

The conclusions at which we arrived in our paper were as follows:

I. Catatonia is not a distinct form of insanity—not a clinical entity.

II. There is no true cyclical character in its manifestations; hence it can not properly be classed as a form of circular insanity.

III. It is simply a type of melancholia.

IV. It is not desirable, therefore, to retain the name catatonia.

V. The term "catatonic melancholia" or "catatonic syndrome" may be usefully retained as descriptive of melancholia with cataleptic symptoms, verbigeration, and rhythmic movements, but should be strictly limited to this symptom-complex.

VI. The prognosis in melancholia with catatonic symptoms is more grave than in any other form.

VII. The treatment of the catatonic syndrome is the same as for the other types of melancholia.

Periodical or *intermittent* or *recurrent melancholia* has about the same significance as the similar designation of forms of mania.

Other names are frequently given to melancholia, such as senile, puerperal, and the like, but they merely cite some determining factor. The fundamental condition is the same.

Pathological Anatomy.—As is true of mania, there is also no known pathological anatomy for melancholia. It is a functional nutritional disorder of the brain, a diminished or perverted metabolism, supposed, theoretically, to rest upon a cerebral anemia, or, possibly, an autotoxemia.

Course of the Disease.—There is no such distinct prodromal stage in melancholia as in mania. The period of invasion is deliberate, and the symptoms chiefly manifested at first are gastro-intestinal disorders, dyspepsia, loss of appetite, constipation, accompanied by sensations of pressure in the head or headache, insomnia, and general malaise. The depression itself is the cardinal early psychic symptom. Melancholia, like all psychic disorders, is slow in its progress, and runs a course of from three to six months in the most favorable cases, but sometimes a year or two or three elapse before recovery takes place. Ordinarily, recovery is gradual, and is frequently accompanied by a species of reactive

exaltation. Occasionally recovery is quite rapid. In women the approach of convalescence is indicated by a return of the menstrual function. In all cases improvement in physical health accompanies convalescence.

Melancholia terminates in recovery (ninety per cent.), in recovery with defect, in death, in secondary dementia, in chronic melancholia, or in a secondary paranoia.

While the majority of cases of melancholia recover completely, there are a few in which, despite apparent recovery, accurate investigation reveals a defect of the intellectual powers, a difficulty of entertaining complicated conceptions and judgments, which may easily escape the notice of the patient's friends. In a very small number of cases the mind becomes so enfeebled that the condition becomes a veritable secondary dementia, in which we discover vestiges of the antecedent melancholia in the shape of automatic phrases and movements and expressions of a depressed color, yet without any actual affective mood. The patients become negligent of person and dress in the extreme, even filthy in their habits.

A chronic persistence of the melancholic symptoms is rather more frequent as a termination than secondary dementia. In chronic melancholia we observe symptoms of either the simple depressed or the agitated form with which the disorder began, but these symptoms are diminished in intensity. The precordial distress disappears. Some of their delusions, movements, and verbal expressions become automatic, as in cases accompanied by dementia. Special forms of chronic melancholia are the insanity of negation and insanity with transformed or duplicated personality. These are very apt to develop upon a hypochondriacal basis.

A termination of melancholia in a paranoid condition (paranoia secondaria melancholica) while rare, is rather more frequent as a sequel of melancholia than of mania. In these cases there are numerous hallucinations, and a cluster of delusions, religious, persecutory, or hypochondriacal, which gradually become systematized to a greater or less degree. About half of such cases recover ultimately, the remainder passing into a condition of dementia.

Death in cases of melancholia is due to suicide, marasmus, visceral disorders, diarrhea, pneumonia, etc. A very large number of long-standing cases die of tuberculosis.

Diagnosis.—One of the most common conditions with which melancholia may be confounded is a depressed stage of general paresis. The chief points of distinction are the actual intellectual defect nearly always demonstrable in paralytic dementia, and especially the physical symptoms of paresis, pupillary changes, faciolingual tremor, characteristic speech, greatly exaggerated or lost deep reflexes, and one-sided facial weakness. The depression of the paralytic dement is superficial. His melancholy delusions are ordinarily distinguished by their inordinate and preposterous character, by the monstrosity of their contents. In addition to these points, the signs of previous syphilis and the age from thirty-five to fifty years would have some corroborative value in the diagnosis of general paresis.

A primary dementia may be misinterpreted as a stuporous form of melancholia. In primary dementia, intellectual defect is the cardinal symptom; in apathetic melancholia there is no intellectual defect, and the apathy is often clearly accompanied by painful affects from time to time.

Hallucinatory paranoia with depressive hallucinations may be confused with melancholia. In hallucinatory paranoia we have two varieties, a stuporous and an agitated form, and these have some analogy to melancholia attonita and melancholia agitata. The want of fixity and systematization of delusions in melancholia is to be remembered. The history of the patient will often reveal whether the depression is primary or not. But the differentiation is often difficult, and especially so between hallucinatory melancholia and hallucinatory paranoia. Long and careful study of the case during its progress may be requisite for an absolute diagnosis.

Senile dementia may simulate a melancholia with stupor. The age and the intellectual defect present will be in favor of the former. But senile melancholia is particularly apt to present an apparent defect of intellect.

The possibility of the melancholia being a phase of a circular insanity is also to be borne in mind.

There are instances of such a disorder as typhoid fever being temporarily mistaken for melancholia, but naturally the course of the temperature and the character of the stupor or delirium would soon correct such an error.

Prognosis.—The facts which will shape prognosis are to be drawn from what has been said previously in regard to the course and termination of melancholia. In simple forms of the disorder the prognosis is very favorable indeed, and recovery can be predicted in from three to six months. In the agitated type the outlook is less favorable, and in hallucinated and apathetic forms still less so. The catatonic variety is the least favorable of all as regards recovery.

Treatment.—The first consideration in the treatment of acute melancholia is isolation. Separation from the friends and relatives and removal from the environment in which the psychosis has developed are of the greatest importance. With familiar faces and objects about him, and with his kin offering their help and sympathies, the keenest realization of his condition is brought home to the melancholiac. He feels among them all the more deeply a sense of his incapacity, of his inability to fulfil the ordinary duties and demands of his usual daily life. Whether the patient is to be isolated by commitment to an asylum depends upon several circumstances: his means; the intensity of his malady; the presence of suicidal tendencies. There are very mild cases in which moderate travel, a sojourn in the country with a nurse, a few months at the house of some country physician or in a small private asylum, will result in recovery. But the responsibility for such a course must rest with the physician who advises it, and he must keep in mind the danger of suicide in even the mildest type of melancholia. Not a few lives have been needlessly sacrificed by the inexpertness of

the consulting physician. Besides extreme watchfulness on the part of the caretaker, who is not to leave the patient alone either night or day, a modified or a complete rest-cure is to be undertaken. For mild degrees of melancholia rest in bed from 6 P. M. until noon of the next day, with plenty of out-of-door exercise during the remainder of the afternoon, is most commendable. For the more severe types, continual rest in bed is requisite. The food should naturally be easily digestible and assimilable, and the patient should be made to take considerable quantities of milk and milk products (koumiss, matzoon, somal, etc.), raw eggs, meat-juices, and stimulants, when these are indicated. Massage and general faradization (sufficiently strong to contract the muscles) are useful to take the place of exercise in cases taking the complete rest-cure. Constipation should be regularly counteracted by abdominal massage, frequent purgation, glycerin injections, enemata, etc. This is particularly necessary in cases suspected of suffering from auto-intoxication. In these cases, too, gastro-intestinal antiseptics—such as salol, gr. v, or beta-naphtol, gr. v—should be administered thrice daily two hours after eating. Ten grains of glycerophosphate of soda in a large glass of hot water a half hour before eating is also a useful remedial agent in melancholia. For sleeplessness the prolonged warm bath or the hot wet-pack is to be recommended; in the event of their failure to induce a few hours' sleep in each twenty-four hours, sleep-producing drugs are necessary. Sulphonal and trional, of each ten grains, given together at bedtime with a glass of hot milk or a cup of hot soup, are efficient in mild cases.

The opium treatment is a sort of specific for melancholia, especially when there are agitation and precordial anxiety and distress. Beginning with a medium dose three or four times a day, we gradually increase it as required. Laudanum—the solid extract—or codein may be administered by mouth. When employed hypodermatically, which is usually best, the watery extract of morphin is used. It is preferable to administer morphin only in the most aggravated cases, and in these it may often be advantageously combined with hyoscin, hyoscyamin, or duboisin. It is needless to say that the opium treatment should not be made known to the patient, and it is carried out with more safety, as regards the formation of a habit, when the patient is in an institution. As the patient improves, the opium is gradually reduced until it can be finally cut off altogether. Opium does not increase constipation, except possibly for a few days when first employed; it seems actually in many cases to diminish it. Sometimes, indeed, we need to treat diarrheas that arise as a result of the opium treatment.

As soon as it becomes possible to do so, physical occupation should be begun and encouraged. A life out-of-doors, made interesting by different kinds of amusement or labor; walks, field studies in natural history (botany, ornithology, geology, physical geography, etc.), golf, bicycling, agriculture, and gardening—all of these have their place among the remedial agents at the disposition of the discerning and judicious physician.

CHAPTER VIII.

CIRCULAR INSANITY.

Synonyms.—Alternating Insanity; Insanity of double form; Insanity of double phase; Cyclic psychosis.

Definition.—Circular insanity is a form of psychosis characterized by an alternation of states of mania and melancholia. There are varieties of circular insanity which will be discussed later, but the maniomelancholic alternation is the distinguishing feature of all types of this cyclic psychosis.

Etiology.—Heredity plays an especially significant part in the causation of circular insanity (sixty per cent.). Not only do we find in the family history of the majority of these cases hereditary equivalents of different kinds, but direct inheritance of this particular variety of mental disorder is strikingly frequent.

Many degenerates exhibit a tendency to an alternating variation of mood. Sometimes they are depressed and sometimes cheerful. It is probable that this oscillation of moods in an individual with strong hereditary taint may be the rudimentary foundation upon which the superstructure of a circular insanity is subsequently laid.

Among special factors which tend to develop cases of acquired circular insanity are trauma to the head, alcoholism, hysteria, and epilepsy. The exciting causes are physical and moral, such as have been described in the chapter on General Etiology. Circular insanity is much more common in women than in men, the proportion being about four to one. Many cases develop about the age of puberty, and nearly all before the age of thirty years. The frequency of this type of psychosis as compared with other forms has not yet been determined. It is only recently that it has begun to be classified as a distinct type in our asylum statistics. Thus, the report of the Commission in Lunacy of New York State shows but ninety-six cases of circular insanity in nearly forty thousand admissions between October 1, 1888, and October 1, 1896, but the type had been recognized in the reports required from the asylums for only about a year of that time. It is difficult, therefore, to arrive at any certain conclusion, but the best authorities agree that five and perhaps more cases of alternating insanity will be found among every hundred insane patients.

Symptomatology.—The symptoms will vary at any given time according to the phase which the disorder has reached at the time of examination—the phase of depression or the phase of exaltation. The *melancholic period* may present any one of the forms of melancholia described in another chapter, from a simple depressed condition, scarcely distinguishable from the normal state of the patient, to the most pronounced melancholic syndrome. In some cases we have melancholia simplex, in others the hallucinatory variety; in some the agitation, in

others stupor and catatonia. When, in any given case, the melancholic phase recurs again, it is prone to wear the same features as in the first attack. Thus, mild depression or simple melancholia, melancholia agitata, or melancholia attonita may reappear again and again as the cycle returns, with the same phase and character over and over again. While this is true in the majority of cases of circular insanity, it is not always so, for occasionally the recurring melancholia changes its type in the various sequences. As intimated in the chapter on Melancholia, there is often a species of reactive exaltation in the convalescent stage of the disease, and occasionally this reaction becomes so accentuated as to develop a maniacal condition, so that we have presented to us a picture very like that of an alternating insanity.

Like the melancholic phase, the *maniacal period* of circular insanity

Fig. 275.—A case of circular insanity, photographed first in maniacal or exalted phase, and some months later in the melancholic phase (Dr. Atwood).

may vary in character from a condition of mild exhilaration and exaltation to the severest types of maniacal excitement and incoherence. As in the depressed period, there is the same tendency of the maniacal phase in its recurrences to present regularly the identical features of former attacks, though there are also exceptional instances here where subsequent outbreaks wear a different maniacal aspect.

In the chapter on Mania is made mention of the fact that the convalescence from that psychosis is not infrequently characterized by a reactive depression, a lacrymose irritability. In some instances this may attain to the degree of a true melancholia, and thus place before us a cycle similar to that of an alternating insanity.

Ordinarily we recognize two degrees of intensity in circular insanity —one in which both the mania and melancholia are mild, and one in

which both the mania and melancholia are severe. But there are mixed types, in which the mania may be mild and the melancholia severe, or vice versâ.

Mild types of circular insanity—instances in which both the depressed and exalted phases are so moderate in degree as not to permit of commitment to an asylum—are not infrequently met with by the practitioner, and they are often difficult cases to handle properly. Thus, I have in mind two brothers, now over fifty years of age, who are both afflicted with circular insanity, manifested in a form very distressing to the relatives. A description of one will describe the other, and not only him, but many other similar cases:

E., male, aged fifty-four, single, with hereditary taint, has for many years been subject to alternating attacks of depression and exaltation. I have seen and examined him in both phases. There is little, if any, discernible interval, but a gradual merging of one phase into the other.

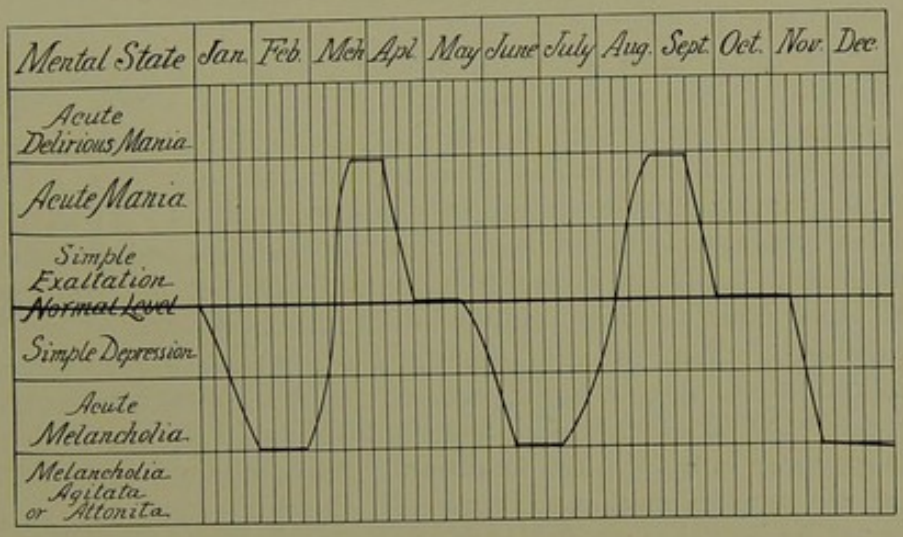


Fig. 276.—Scheme of course of disease in periodical circular insanity.

The depressed period lasts for from three to six months. In this, his expression is dejected; he feels that life is a failure, that he can not live long. He consults various physicians for different maladies which he thinks may account for his general malaise. He can not concentrate his mind on anything, can not read or write letters; refuses to transact the most necessary business in connection with his estate. He talks little, and broods over the mistakes and follies committed in the exalted phase of his disorder. He is rather suspicious and distrustful of his family. Sometimes he is inclined to put an end to his misery by suicide. Little by little this weight of depression begins to lighten, and he passes insensibly into a condition in which he begins to feel himself rejuvenating. Life takes on a little rosier color; his malaise vanishes, and a sense of well-being begins to infuse itself through his body. His expression changes from the fixed look of deep dejection to one of cheerful variability. In the place of quiet brooding we note an awakening interest in things about him. He begins to talk vivaciously, to be

facetious and jolly, to write letters to his friends, to make frequent social calls, to take up the threads of affairs. He discards the doctors, for his health and strength were never better. He takes up some of his old hobbies, one of which is the collection of antiques, arms, plate, furniture, pictures, and specimens of ceramic art. He spends money freely, rather too lavishly. His collections are gathered together in storage warehouses, clubs, his own home, and the houses of his friends. He becomes extravagant and wasteful; enters on great schemes of money-making, in which he becomes interminably entangled and meets with financial losses. His friends expostulate, and he becomes irritable and angry. He leaves them, to live in hotels. He buys a pair of fast horses and takes a drive of several weeks all over the country for hundreds of miles around. He grows boisterous in his conversation, neglectful of the ordinary courtesies and civilities of social life, is lavish in his invitations, becomes a little excessive in drinking, is restless both night and day, travels from one city to another on the most trivial and eccentric errands. He sleeps little. Endeavors on the part of relatives to check the anarchy of his conduct bring from him threats of suits and of personal violence, and letters which are quarrelsome, offensive, even profane. With all this, there is no intellectual defect. He never has actually attempted any overt act which would put him under the control of the law, or aid in his commitment to an asylum to save the dissipation of his energies and the waste of his property. Any jury would discharge him, for his conversation would show good memory, active intelligence, keen-witted replies to all questions. Step by step this stage of exaltation begins to pass away. He sinks nearer to his normal level, resumes a more natural conduct toward his family and friends, until again the depressive elements reappear in his mental condition. Each stadium lasts for from three to six months, so that the cycle fills about one year.

Varieties.—There are two main varieties of circular insanity. One is a true circular insanity in which the phases follow each other in a perfect cycle thus: mania, melancholia, mania, melancholia, mania, melancholia, and so on. The other type is one in which there is a certain periodicity of the maniomelancholic attacks as follows: mania, melancholia, interval, mania, melancholia, interval, mania, melancholia, interval, etc. Most cases can be catalogued under one of these two headings, but there are deviations which do not exactly conform to these well-defined types, and some authors have attempted to make further, but it seems to me unnecessary, subdivisions, upon the basis of variations in the length of interval and irregularities in the sequence of the phases.

Pathological Anatomy.—Autopsies have failed to reveal any important macroscopic or microscopic changes in the brain in circular insanity. Such autopsies as I have been able to find recorded were made upon patients at an age which would naturally reveal some conditions incident to senile involution, and these morbid conditions may or may not have had relation to the mental state of the patient during life. The best that we can say, then, is that, so far as we know, there is no anatomical

basis as yet discovered for circular insanity. Disordered nutrition—either insufficience or perversion of metabolism—probably underlies the manifestations of this psychosis.

Course of the Disease.—In some patients circular insanity has its inception in the melancholic period, and in others it begins with the maniacal phase. Usually the initial stadium is melancholia. The transition from the depressed to the excited phase and vice versâ is sometimes astonishingly sudden. The period of transformation may occupy but an hour or even less. In most cases the merging of one period into the other is very gradual. Another and extremely rare mode of transition is by successive alternations of depression and exaltation, an oscillating or rhythmic transformation. Still another method of change is by means of a lucid interval, brief or long, between the

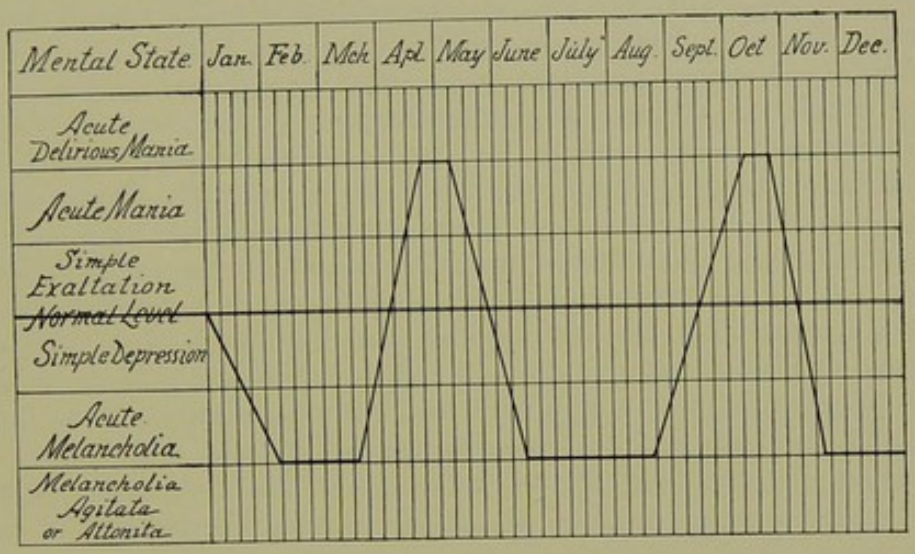


Fig. 277.—Scheme of course of disease in continuous circular insanity.

alternating phases, thus: mania, interval, melancholia, interval, mania, interval, melancholia, interval, etc.

There is extreme variability in the duration of the maniomelancholic cycles. Sometimes they exhibit great irregularity of interval, from a few days to a year or more. Sometimes the maniacal phase lasts one day and the melancholic one day, so that the cycle is completed in two days. In other cases, again, the cycle is completed in two weeks, or a month, or a year. Where alternation is completed in short periods, there is a tendency to great regularity. Usually the melancholy phase lasts longer than the maniacal.

Diagnosis.—It is impossible to make a certain diagnosis of circular insanity unless at least one maniacomelancholic or melancholicomaniacal cycle has been observed. If, in a patient appearing to have an ordinary melancholia or an ordinary mania, there should be episodic oscillations of depressed and exalted emotions (as is sometimes the case in either phase of the cycle of circular insanity), then we are justified in entertaining a suspicion of alternating insanity. Even when an apparent

cycle is brought to our attention in a case of insanity, it is not well to conclude too quickly that we are dealing with circular insanity, for the reactive phenomena of mania and melancholia just referred to may closely simulate the more serious disorder. The greater the intensity of the second phase in such cases, the greater the presumption of circular insanity.

There is occasionally danger of confounding a periodic mania or a periodic melancholia with circular insanity, especially if their reactive phases are notable. Naturally, if the reactive phases are very pronounced, a diagnosis of circular insanity would be justifiable.

General paralysis occasionally presents cyclical phases analogous to those of alternating insanity, but the physical symptoms, the mental enfeeblement, and the preposterous delusions of the expansive periods of paralytic dementia will ordinarily insure a correct diagnosis.

Prognosis.—Circular insanity, though made up of two of the most curable of mental disorders, is, curiously enough, itself among the most incurable. A patient seldom recovers. The disorder runs a long course over years of time, terminating ultimately in dementia.

Treatment.—All cases of circular insanity are best treated in an asylum in order to prevent suicide in the melancholic phase, and violence, excesses, and riotous extravagance in the maniacal period. Unfortunately, it is not always possible to protect the patient by this means, since juries are prone to allow every man his freedom, no matter how dangerous to himself or others, so long as he does not behave as a raving maniac before them. Even in the intervals of lucidity it is better for the patient to be under medical supervision in some institution, with the hope that the disorder may be arrested and future cycles prevented or postponed by the treatment. This treatment is based upon the principles described in the chapter on Treatment and in the chapters on Mania and Melancholia.

The rest-cure and hydrotherapy are recommended for both phases of the cycle. Hyoscin, hyoscyamin, and duboisin (gr. $\frac{1}{100}$ to gr. $\frac{1}{40}$) are useful in the excited stage, and the opium treatment in the depressed stage.

CHAPTER IX.

EPILEPTIC INSANITY.

Some ten per cent. of all epileptics become insane. Hence the epileptic neurosis in an individual renders him about thirty times more liable to insanity than if he were normal. The psychoses to which the epileptic is subject vary extremely in character. It is my aim to give here a brief review of these. I shall not consider under this heading forms of mental disorder in which epilepsy or repeated epileptiform

convulsions make their appearance in conjunction with the psychic disturbance as the result of a common cause (general paralysis, chronic alcoholism, epileptic idiocy, paralytic idiocy, etc.), but shall limit myself to the class of insanities induced by the epilepsy. It is, first of all, necessary to dwell for a moment upon some of the ordinary features of epilepsy, apart from the familiar phenomenon of muscular convulsion. The epileptic is subject to peculiar symptoms, which are looked upon as the equivalents of convulsive seizures. Among these are sudden brief losses of consciousness. The consciousness may be merely clouded or completely lost. There may be no perceptible concomitant symptoms. On the other hand, the defect of consciousness may be accompanied by some pallor of the face, a fixity of the eyes, or a partial local spasm or movement (strabismus, stammering of a few words, grimaces, lifting the arm, bowing movement of the body, turning of the head, etc.). The disorder of consciousness may be associated with an automatic dream-state, similar to somnambulism, in which complicated impulsive movements take place (automatic continuance of acts begun before the seizure, purposeless running, undressing, etc.). Vertiginous attacks may be the equivalent of convulsions. The aura of an epileptic attack may be in the form of a hallucination. A study of the psychology of epileptics in general gives us a sort of composite picture, to which all of these patients conform more or less closely. The mental attitude of the epileptic is due to a variety of circumstances. In the first place, he has a consciousness of the dreadful nature of his malady. He is in a state of expectant attention as regards the sudden blackness and prostration which are to strike him unawares at any time, in any place, like the lightning from a clear sky. He can never share the social pleasures of his fellows. The schools are not open to such as he. When he becomes old enough to work, he finds that no one wishes to employ him. Every avenue of education, every trade and calling, every road to mental progress, is barred. He is a social outcast, an object of commiseration, a burden to his friends, perhaps a family blemish to be kept concealed. The doctor is called in, and, taking, as a rule, a hopeless view of the case, abandons him to the mercy of the bromids, which further his mental, physical, and moral degradation. In this way the epileptic character is evolved. It consists of a mixture of melancholy, hypochondriasis, emotional irritability, moroseness, distrust, misanthropy, mental apathy, and dullness, often combined with morbid religious tendencies and modified by pathological psychic conditions incident to the ravages of the disease itself. These pathological mental states vary from the peculiar psychic equivalents just described to the actual psychoses of divers forms now to be detailed. Epileptic insanity is chiefly a progressive psychic deterioration terminating in dementia. But the progressive degeneration is frequently marked by episodic outbreaks of psychoses under various forms. Among these are transitory hallucinatory and stuporous disorders and chronic epileptic psychoses (under any form, such as mania, melancholia, circular insanity).

Psychic Degeneration of Epileptics.—As is well known, severe

epileptic attacks are ordinarily followed by a somnolent and stuporous condition lasting from an hour or two to several days. The frequent repetition of such attacks tends to render complete recovery from such mental torpor more and more difficult. As a consequence, we observe a gradual weakening of the intellectual processes. The flow of ideas is retarded and the expression of such ideas along motor lines becomes sluggish; the speech especially has a characteristic slowness; attention is diminished and memory impaired; the concepts and judgments are built up with ever-slackening activity. In this way the epileptic may sink gradually into a deepening simple dementia. In some cases the concepts attended with ethical feelings vanish first, and to so striking an extent that acts of violence, cruelty, brutality, and crime are committed without a single inhibitory effort or a shadow of remorse. These acts often have an impulsive character.

An excessive irritability of temper is a phase of epileptic psychic degeneration. The most trivial incidents may give rise to outbursts of anger and even of overwhelming fury.

The natural hypochondriacal depression of many epileptics is frequently much exaggerated, giving rise to a sort of melancholia colored by mental enfeeblement, and by suspicion, distrust, misanthropy, and moroseness.

Occasionally, in the midst of this progressive deterioration of mind, imperative ideas and acts manifest themselves, and delirious states appear with dreadful hallucinations and delusions of persecution (paranoia-like outbreaks).

These are the marks which distinguish the psychic side of the gradually developed dementia of epileptics. The mental enfeeblement is accompanied, as in terminal dementias generally, by increase in bodily weight, hypertrophy of the subcutaneous fatty tissue, and the gradual effacement of the lines of expression in the features. We thus reach ultimately the condition of

Epileptic Dementia.—As intimated, the rate of progress of epileptic dementia is in direct proportion to the number and severity of seizures. There are cases which go on to the terminal stage without some of the peculiar manifestations of progressive epileptic degeneration just described, and others, again, in which these features are prominent. The dementia may be absolute, so that not the simplest concrete memory-picture remains in the vacant mind; the patient needs care in his person and dress, and often has to be guided and assisted in taking nourishment. His sensibilities become so diminished that he is indifferent to stimulation of any sense, and has no perception of the needs of the body as regards the bowels or bladder. He must be cared for like an infant. A persistent sexual instinct often impels him to constant masturbation.

During progress into dementia, we note the intercurrent hallucinatory states already mentioned, and the accesses of anger, with assaults and impulsive actions of various kinds. The motor memories suffer in the end to such degree that all complicated movements are forgotten. This is particularly noteworthy in the use of words, which are separated by considerable pauses. Often even the syllables are thus divided. Finally,

the patient loses the power of speech altogether (aside from the actual aphasic attacks, which are not infrequently observed in connection with severe epileptic seizures).

The course of epileptic dementia is rarely rapid; it usually extends over a period of years. The cause of death is usually accident, status epilepticus, pneumonia, intestinal catarrh, inflammation of the bladder, or some other intercurrent affection. Epileptic dements exhibit a diminished resistance to diseases in general, and never attain great age.

Acute Transitory Epileptic Insanity.—The acute insanity of epileptics develops suddenly before a convulsive seizure, after the attack, or it may occur in the interval between the epileptic convulsions, commonly in the place of a convulsion, as a so-called psychic equivalent. As a rule, both onset and termination are sudden. The duration of the insanity is ordinarily from a few hours to a few days, though the attacks are sometimes shorter and sometimes longer. The symptoms are peculiar and various. The chief characteristic is the clouding of consciousness. The patient's state may be one of complete unconsciousness, though usually consciousness is not entirely lost. It is rather a condition of subconsciousness or of subliminal consciousness, with stupor. Upon this screen of clouded consciousness there is a play of multiform and bizarre psycopathic outlines—many-hued, terrible, or ecstatic hallucinations; delirium, mutism, incoherence, verbigeration, anxious states, delusions (often of a persecutory nature), or irresistible impulsions to assault, destructiveness, homicide, and suicide. Sometimes the fundamental tone of the outbreak is melancholic, more often maniacal, but the most appropriate designation of these acute epileptic psychoses is, perhaps, acute hallucinatory paranoia. There is no essential difference between them, whether the attack be preparoxysmal or postparoxysmal, or the equivalent of the paroxysm.

The stupor of epileptic insanity is distinguished from that of other psychoses by marked loss of consciousness, enfeebled attention, analgesia, sudden violence, and confusion.

We sometimes observe in connection with subconsciousness primary anxious states, resembling precordial dread, with extremely painful sensations of oppression and suffocation in the breast; and much more rarely primordial exaltation, with acceleration of the stream of ideas.

Hallucinations are mostly limited to the visual, auditory, and olfactory senses, chiefly to the first-named. The patient sees wild beasts, specters, flames, the fires of hell, wheels, gigantic threatening objects, falling walls, overwhelming waves of water; or, on the other hand, the golden gates of heaven, the jasper throne, God, and the choir of angels. He hears menacing voices, clamor and uproar, the thunder of cannon, or the singing of the hosts of heaven, the voice of God, etc. Disagreeable and noxious or pleasant odors may be perceived. A peculiarity of these hallucinations is a certain monotony of character, a general sameness, in great part due to the rather child-like constitution of the mind of epileptics. Their education and mental evolution are so often, from the nature of their malady, hampered and retarded, that they pass through life with the fancy and understanding of a child.

Incoherence of speech and lack of orientation as to surroundings are more marked in epileptic insanity than in any other psychosis.

The motor symptoms vary extremely. Sometimes we note motor inhibition attaining to complete immobility and mutism, lasting for hours, days, or weeks at a time. Such quiescence is often interrupted by sudden explosive acts of violence. Again, in other cases, we observe agitation, restless wandering about, purposeless and impetuous running hither and thither, assaults, destructiveness, and, rarely, complicated acts, like theft and other petty crimes. A condition of religious ecstasy is not uncommon. The patient may feel himself wafted to heaven, where he converses with God, Christ, and the disciples.

In some rare instances epileptics are subject to dream-like states of subconsciousness, similar to somnambulism, in which complicated acts are carried out. Like the somnambulist, such patients may seem to be conscious, may comport themselves in speech and conduct in a perfectly natural manner, and in this condition, which may last for hours, days, or even weeks, commit offenses against the law, wander off as tramps, or do some extraordinary thing in following the imperative, childish, silly, or fantastic ideas which control their dream-state.

The disorders of memory incident to transitory epileptic insanity are both interesting and important. There may be, upon recovery, absolute amnesia as regards everything that has taken place. There may be remembrance of much that has occurred immediately after the insanity has passed, with subsequent amnesia. There may be complete amnesia at first, with glimpses of remembrance afterward. There is rarely any persistent recollection of the events of the psycopathic state.

As has been stated, the rule is for these transitory epileptic insanities to exhibit a sudden onset and a sudden termination. The longer the duration, the less abrupt the cessation. The majority of these patients recover, but recurrence is, of course, frequent. Termination in a chronic condition is rare. Occasionally, death takes place from exhaustion, intercurrent maladies, or from a convulsive seizure or series of attacks during the psychosis. Recurrences tend to hasten a psychic degeneration ending in dementia.

The epileptic nature of such insanity as is here described, where the history is not known, is determined by the following characteristics: (1) Sudden onset and abrupt termination; (2) the terrifying or ecstatic nature of the hallucinations and delusions; (3) disturbance of consciousness and stuporous condition; (4) impulsive acts; (5) dream-states; (6) amnesia.

Chronic Epileptic Insanity.—Aside from epileptic dementia, the acute epileptic psychosis just described may take a chronic course, or assume a periodic form, with little improvement in the intervals between the exacerbations. There are cases which closely resemble chronic mania in their long course, and others in which melancholia is the predominating feature. The epileptic attacks to which these patients are subject are naturally the distinguishing feature, and a special color is given such cases by the epileptic psychic degeneration. Occasionally a

true circular insanity is presented, with its alternating maniacal and melancholic phases.

Treatment.—Most cases of pronounced epileptic insanity require commitment to an asylum. Their proclivity to sudden accesses of rage and fury and to impulsive acts of violence necessitates this course. Where there is simply a moderate amount of psychic degeneration this course is not necessary.

The treatment should be, in the first instance, prophylactic; but, after the development of the psychosis, it consists of a combination of the treatment of ordinary epilepsy with that of the particular type of insanity presented.

Preventive therapy is concerned with the counteraction of the many elements which favor mental deterioration, with the mitigation of the epileptic's early sufferings, with the reconstruction of his environment. It may be called the moral and manual method. The moral part of it is the opportunity for education, regular occupation, and recreation. The manual and hygienic part of it, the acquisition of out-of-door trades or callings—muscular exercise, which in itself serves to reduce the number and intensity of convulsive seizures. I may be pardoned for dwelling somewhat longer on this subject of preventive therapy, and for allowing my pen to go over the same lines which it has traveled so often in past years, because I am convinced that this moral treatment marks the greatest stride in advance made for centuries in the therapeutics of epilepsy. For ages drugs have been exploited as helpful or curative; but, after all, little has been accomplished from the standpoint of materia medica. Only of late years has the moral treatment become prominent. As a rule, the epileptic patient was dismissed by his physician with a prescription of uncertain value and possibly a few general directions as to diet. It was not known to the practitioner—or, at least, he did not concern himself about the matter—that the epileptic could gain admission to no hospital of any kind; that he had no associates, occupation, or recreation; that, debarred from the schools, he grew up uneducated, and with a tendency toward retrogression rather than progress; and that, without teaching, reared in idleness, suffering from a dreadful malady, neglected in body and mind, he could find shelter at last only in the almshouses and insane asylums, these being the only institutions open to him. Yet, in by far the majority of cases of epilepsy, the attacks rob them for but brief intervals of the capacities for study, work, recreation, and social pastimes, which they possess in common with their more fortunate fellow-men. Hence the adoption of a scheme of colonization of epileptic dependents on the model of the great German colony at Bielefeld, of which the Craig Colony, in the State of New York, is an example. The Craig Colony consists of a tract of nearly nineteen hundred acres of land in the most fertile, productive, and picturesque valley of the State (the Genesee Valley). Upon this are already some fifty to sixty buildings, with accommodations at present for but 300 patients. Over fifteen hundred epileptics are now on the list of patients awaiting admission. Here they are to be given an education in the various branches of learning taught in the public schools, to be

instructed in every kind of industry, to be treated each and every one for epilepsy, and to be offered a home in a sort of village life, where they will no longer have the feeling of social ostracism, or be debarred from the privileges of intellectual and moral development enjoyed by the rest of mankind.

The out-of-door life in a farming community has already had wonderful results, which may be learned from the annual reports of the colony. It will suffice to say here that the average reduction in frequency of attacks among all the patients has been fully fifty per cent., and that the mental and moral regeneration of the beneficiaries has been truly remarkable. What the effect of such change of environment must be as a prophylactic against psychic degeneration and insanity can not be estimated. We may now briefly touch upon the medicinal and surgical treatment of epilepsy. The old drugs—borax, nitrate of silver, belladonna, and the bromids—have their uses. One is valuable in one case and not in the other; and each patient, where the disease is idiopathic, and no etiological indication exists for the preferment of an especial agent, must be experimented upon with one drug after another for two or three months at a time, until a satisfactory remedy is discovered. Upon the whole, the bromids are most effective as a general antispasmodic for all cases. While the bromids are, perhaps, the most useful remedy we can employ as an antispasmodic in many cases of epilepsy, their exhibition in every case is not advisable. With a considerable number of patients the bromids are entirely ineffectual; with no small number, too, very serious symptoms, such as acute bromism, increase of seizures, and even insanity, supervene upon their use. In many of the cases where actual good is done by the bromids in reducing the frequency and severity of the attacks, the concomitant symptoms are such that it becomes questionable whether the remedy be not, after all, worse than the disease. The writer makes it a practice, therefore, to exhibit the bromids with caution, and never to employ them until the series of less harmful, but often quite as efficacious, remedies for epilepsy have been tried in vain.

There are some new drugs and remedial methods that have come into vogue of late which are worthy of attention. In the first place, there is simulo, a South American plant of the hyssop family, the tincture of which is given in doses of one to two or three drams three times daily. After an experience in many cases for several years, I would say of simulo that it deserves trial in most cases; that it is perfectly harmless, which can not be said of the bromids, borax, belladonna, and some other drugs; that in a few cases it has been extremely beneficial in my hands, and that in most cases it has no effect at all. Simulo combined with small doses of bromid acts very well. The so-called opium-bromid treatment of Flechsig is of value for many patients, especially in old and obstinate cases where all other agents have proved ineffectual. This treatment consists of the administration of opium for some six weeks, beginning with one-half to one grain three times daily, and increasing gradually until ten to fifteen grains a day are taken, when the use of opium is suddenly stopped, and bromids in large and grad-

ually reduced doses are given (thirty grains four times daily, to begin with). I had used in certain cases of epilepsy for some years codein with considerable success, but this combination of the opiate with bromids is still more satisfactory.

Adonis vernalis conjoined with the bromids, as recently suggested by Bechterew, is an efficient method of treatment, from which, in several instances, I have had gratifying results. Digitalis, which has properties similar to Adonis vernalis, was formerly frequently given in epilepsy, but the new combination seems to be much more efficacious.

There are a few cases of epilepsy in which careful investigation indicates self-intoxication as a factor. In these an excess of ethereal sulphates (indican) in the urine, together with periodical or constant attacks of gaseous diarrhea, are almost positive manifestations of putrefactive or fermentative changes taking place in the alimentary tract. It is remarkable how much benefit may be obtained in such patients by the regulation of the diet (milk and its modifications, koumiss, matzoon, somal, rare or raw beef, eggs, green vegetables, and special breadstuffs, like Zweiback, Huntley & Palmer's breakfast biscuits, and Voebt's *biscotte de legumine*), by the frequent drinking of hot water and the occasional flushing out of the large intestine by hot water, and by the use of certain intestinal antiseptics, given two hours after eating, with plenty of water (beta-naphtol or salol, gr. v).

The remarkable effect of the thyroid extract upon general nutrition would naturally suggest the advisability of its administration for experimental purposes in some of the nervous diseases which we are accustomed to look upon as due to nutritional disturbances in the nervous system. With this idea in view, I have employed it in a good many cases of epilepsy, in a number with very good effect. Especially noteworthy was mental improvement in several cases of epilepsy with apparently considerable dementia. It is worthy of more extended trial.

Aside from the remedies for the epilepsy just described, we need occasionally to employ certain other drugs for particular conditions, such as status epilepticus, maniacal outbreaks, pronounced melancholic states of terror, etc. In status epilepticus rectal injections of chloral, gr. xx, with an ounce of starch-water, repeated at intervals of two or three hours if needed, give the most satisfaction. In great ideomotor excitement we should use hyoscin, hyoscyamin, or duboisin hypodermatically, in doses of $\frac{1}{100}$ to $\frac{1}{40}$ of a grain. In anxious melancholic conditions morphin hypodermatically is, perhaps, the best alleviating agent to exhibit.

The question of trephining must naturally come up in certain cases of epileptic psychoses where trauma to the head is evidently the cause of the epilepsy and psychic degeneration. The following points are to be taken into consideration as a guide in this matter:

1. In the very small number of cases having injury to the head as a cause the epileptic habit is so strong, and the changes in the brain are usually so old and deep-seated, that an operation, as a rule, does not cure, and seldom permanently diminishes the frequency of the attacks.

2. Of miscellaneous traumatic cases, where a surgical procedure seems justifiable and is undertaken, a cure of the epilepsy may be reasonably expected in, perhaps, four out of every hundred cases operated upon.

3. The removal of a cicatrix from the cortex, supposed to be the epileptogenic nidus, will naturally be followed by the formation of a new cicatrix in the surgical wound—the creation, therefore, of a new epileptogenic center.

4. The more recent the injury, the greater will be the promise of lasting benefit.

5. In cases of traumatic epilepsy with marked epileptic psychoses (recurrent attacks of rage, fury, violence, destructiveness, etc.) trephining would be justifiable as a possible means of diminishing the severity, danger, and frequency of the maniacal attacks, even though the epilepsy itself or the psychic degeneration might not be improved.

CHAPTER X.

DEMENTIA.

Secondary; Senile; Primary.

Definition.—"Dementia" is a term employed to designate simply a general enfeeblement of all the mental faculties. It is often used improperly by the laity as synonymous with insanity. But in medicine it signifies only a general weakening of a mind once normal. Hence it is not applied to congenital mental weakness. The term "idiocy," with its various degrees, includes all of these congenital psychic defects. There are innumerable gradations comprised in dementia, from the merest dullness to profound deficiency or complete loss of all the intellectual faculties. Such enfeeblement of the mind may be the result of serious cerebral diseases or disorders, such as epilepsy, alcoholism, syphilis, etc., when the dementia is qualified as epileptic, alcoholic, syphilitic dementia, etc. It is often a sequel to acute insanities, like mania and melancholia, and to chronic psychoses, like circular insanity and paranoia, and hence the distinctive term *secondary dementia* applied to such examples. It takes the chief part in the syndrome of paresis, so that that disorder is often entitled "paralytic dementia." Progressive mental enfeeblement not infrequently accompanies senile involution and organic changes in the brain incident to that epoch of life; hence the well-known disorder called *senile dementia*. Finally, there is a form of mental disease characterized in the main from the very beginning by extraordinary psychic enfeeblement, and this malady is classified as an *acute* or *primary dementia*.

Under the heading of dementia we shall now consider separately the more important forms of dementia just described—viz., secondary dementia, senile dementia, and primary dementia.

SECONDARY DEMENTIA.

Secondary dements make up by far the greater number of the patients accumulated in our large asylums. Every year the number is augmented by the increment of new cases which enter upon this terminal and incurable condition. It has been estimated that some two-thirds of the patients in asylums belong to this category.

Symptomatology.—The cardinal symptoms are defect of memory, deficient ideation, and feebleness of judgment. There is no longer any logical coördination in the flow of thought. The speech is incoherent when there are any ideas at all to seek expression. Some patients chatter a great deal with no coherence or meaning, the only connection of one word or phrase with another being similarity of sound. Other patients are absolutely silent. Hallucinations are often present, more particularly at the period of transition from the antecedent psychosis to the terminal dementia. Delusions may also exist, but they are vestiges of the delusions of the primary insanity carried over into the secondary condition. The feebleness of mind is shown especially in the state of the emotions, which have a child-like simplicity of expression. These patients laugh boisterously over nothing, weep about trifles, and are easily enraged without sufficient motive. Naturally, all of the higher concepts are lost, especially those of esthetic and ethical character. The habits become depraved and loathsome in extreme cases. Masturbation, destructiveness of clothing, besmearing of the person with and eating of filth are frequent manifestations in the lowest degrees of dementia. The patients become robust and fat. They lose all expression, save some single, automatic, fatuous smile, angry frown, furtive look, or aspect of misery, which may linger as a legacy from the previous psychosis. They swallow anything they can get hold of; they collect pebbles, pieces of paper, string, glass,—in fact, all sorts of rubbish,—which they either pocket or use for personal ornament. Many show a proclivity to automatic movements, analogous to those observed in idiocy, such as anteroposterior or lateral oscillations of the body. Occasionally these movements are more complicated, taking the form of grimaces ; gesticulations with the fingers, hands, and arms ; running to and fro, running in a circle, whirling round on the heel, etc. A considerable loss of sensibility to pain is generally noticeable in secondary dements. Hematoma auris is common among them.

It is customary to classify secondary dementia into two groups, bespeaking contrasting syndromes—viz., *apathetic* and *agitated* dementia.

Patients with apathetic dementia are expressionless, never speak, crouch or lie about the floor or in corners in the most negligent attitudes, and cover their heads with their clothing.

Patients with agitated dementia are the restless ones just alluded to,

and such cases as show a tendency to accesses of excitement. These outbreaks are doubtless aroused by processes going on within the organism, since they occur without any external exciting cause.

Secondary dementia may be regarded as a presentment of the mind in ruins. The storm has swept by with its havoc and devastation. After its fury has been spent, a certain amount of placidity remains. In the midst of this calm we note the wreck that has been wrought. Some of the old architectural details stand out, so that we may still recognize what manner of mind it was. There are residua, too, of the destructive agent that was at work, traces that indicate the character of the brain-storm when it was at its height.

The foregoing are the main outlines of secondary dementia, but, as intimated before, there are innumerable gradations of mental enfeeblement in these cases. A large part of the work done in and about asylums is performed by secondary dements in whom the intellectual decay is not extreme.

Course and Prognosis.—The course of secondary dementia is chronic. Usually, there is no progressive increase of mental enfeeblement, rather a pause after a time, when the mind reaches a certain plane of deterioration. Here the process becomes stationary. The patient leads his mindless, vegetative existence for years and years, sometimes to a good old age, because in the asylum he lives a life of perfect regularity as to food, sleep, and exercise, and is snugly protected from the vicissitudes of weather and of the daily struggle in the outer world.

These patients never recover. Actual tissue-alterations were made by the psychosis which swept through their brains.

Pathological Anatomy.—Thickening of the vascular walls, distention of the perivascular spaces, destruction of ganglion-cells and cortical association fibers, and some narrowing of the cortex—these are the main postmortem findings.

SENILE DEMENTIA.

This is a progressive mental enfeeblement at the period of senile involution, dependent upon organic changes in the brain : therefore, a chronic organic psychosis.

Etiology.—Heredity has been noted in some fifty per cent. of the cases. Males and females suffer about equally. The disorder rarely appears before the sixtieth year. Mental stress and physical illness, together with the senile involution, are the chief etiological factors. In most of the cases arteriosclerosis takes part in the causation of the disease, inducing, as it does, general malnutrition of the brain, as well as frequent local degenerations of small or large extent.

Symptomatology.—The earliest symptom is failure of memory. The most recent memories disappear first in a sort of chronological order. After a time the patient fails to recognize any of his surroundings or any of the people about him. He converses with those near

him, and miscalls them, as if they were old friends of long years ago. He lives over old events as if they were now enacted. Later on even these old memories vanish also. With failing memory, the judgment-associations perish. The patient commits many breaches of decorum, and later, with the degeneration of ethical feelings and the ascendancy of coarser instincts, may become very negligent, indecent, and unclean in habits; may pilfer and destroy things; may expose his person, masturbate, or attempt liberties with little girls, etc. His loss of judgment may induce him to foolishly squander his money and properties.

Illusions and hallucinations begin to manifest themselves. They are usually of terrifying character.

Delusions make their appearance. These are nearly always persecutory in nature, and arise either as primary ideas or as the result of depression or on the basis of hallucinations. Next to delusions of persecution in frequency, we observe hypochondriacal delusions, with contents modified by the weak-mindedness present. Delusions of approaching poverty are quite common.

The underlying mood is often melancholic; an exalted mood is extremely rare. Changeability with irritability is perhaps the most usual affective condition.

The behavior of these patients in relation to night is noteworthy. Illusions, hallucinations, delusions, and emotional states all become more pronounced at night. A striking feature, too, is extreme motor restlessness, especially at night. These patients try to get up from bed, to wander about the house, to get away from something or somebody. Sometimes true melancholic anxious states come on and lead to attempts at suicide.

So far as bodily symptoms are concerned, we note foremost among them a general senile decrepitude, to which are added senile tremor of the hands, and often various stigmata of focal lesions in the brain (aphasic and paraphasic attacks); sometimes hemiparesis, monoplegia, hemiplegia, etc., complicate the picture. The patients often complain of severe pains all over the body, of vertigo, ringing in the ears, sparks before the eyes, etc. Often, too, there is noticeable diminution of sensibility to touch and pain in various areas, or over the whole body. Occasionally an especial color is given to the symptoms described by true maniacal or melancholic phases appearing in the course of the disease.

Course and Prognosis.—Senile dementia develops gradually upon the basis of senile psychic degeneration, and lasts, ordinarily, from three to five years, sometimes with remissions which are never so noteworthy as the remissions of paralytic dementia. In rare instances an acute course is taken, the disease terminating by death in a few months. Paralytic attacks are not infrequently observed in the course of the malady, giving it a certain analogy to paresis. The prognosis is unfavorable, as the disorder is incurable and progressive to a fatal end.

Diagnosis.—The most important indications for diagnosis are defects of memory and judgment and acts dependent upon loss of ethical feeling.

Pathological Anatomy.—We observe at autopsy chiefly the following conditions :

1. Osteophytic deposits on the inner surface of the skull.
2. Pachymeningitis hæmorrhagica interna (more frequently even than in paralytic dementia).
3. Opaque and thickened leptomeninges.
4. Increased fluid, subdural, and in the meshes of the pia-arachnoid.
5. Distention of the ventricles with serum, and granular ependyma.
6. Extreme narrowing of the cortex, with gaping sulci.
7. General endarteritis deformans (often with foci of softening and hemorrhage).
8. Wide-spread degeneration of ganglion-cells and association fibers.

Treatment.—Many cases of senile dementia can be treated at home. It is only when tendencies to suicide, sexual immoralities, waste of property, and great ideomotor excitement are exhibited that commitment is necessary. The bromids are the best hypnotic for these cases. Paraldehyd is extremely useful, too, since it is efficient as a hypnotic and does not injure the circulation or affect the digestive apparatus. In melancholic phases opium acts well. Hyoscin and its congeners are not to be recommended because of their depressing action on the heart.

PRIMARY DEMENTIA.

Synonyms.—Acute dementia ; Acute curable dementia ; Stupiditas.

Definition.—Primary dementia is an acute curable psychosis characterized by ideomotor inhibition and apathy. The inhibition of thought may attain to the degree of complete cessation of the psychic functions, and that of motion to complete immobility.

Etiology.—This is essentially a disorder of youth. A rare disease in itself, it is chiefly encountered in young persons between the ages of puberty and thirty years. After thirty-five it is extremely infrequent. A neuropathic constitution is found in some sixty per cent. of the cases. Any mental or physical stress that induces exhaustion of the nervous system may act as an exciting cause of primary dementia. Fright, concussion of the brain from trauma, hemorrhages, frequent child-bearing, physical and mental overwork or overexertion, and masturbation have all been cited as etiological factors.

Symptomatology.—The development of the malady is gradual. At first there is difficult concentration of the thoughts with loss of interest in everything and a certain restlessness. The patient perceives a lack of energy in his idea-associations ; nothing suggests thoughts to him, and he begins to feel a sort of depressed wonder at his own condition. Complicated processes of thought become impossible, and even the simplest concrete memory-pictures are difficult of recollection. He can not recall the countenances of his friends, the position of the furniture in his room, the situation of his home, the events of the past or of yesterday. He feels his head empty of ideas. Things seem to grow distant ; voices sound far away. The senses become blunted and respond at first slowly,

later not at all, to stimuli. The patient sinks deeper and deeper into a dream-state. His face becomes expressionless, his eyes staring into vacancy. He makes no response to questions. He pays no attention to his surroundings, to his dress, to his physical needs. He grows anesthetic and analgesic. The cutaneous reflexes are markedly diminished. The pupils are widely dilated, and react but sluggishly. The tendon-reflexes are exaggerated. There are no delusions, hallucinations, or illusions, as a rule, though in some rare instances there may be some transient manifestation of such symptoms. The immobility is flaccid in character, only seldom presenting any indication of spastic tension. For hours and days he will stand, sit, or lie in one place. He is usually speechless, but if an attempt is made to utter an interjection or phrase, the voice is so low as to be little more than the movement of the muscles of articulation. The pulse is small and weak, the heart-action retarded, the temperature subnormal, the respiration shallow.

A peculiar feature of the condition is the occurrence of sudden episodic periods of excitement, with a certain amount of exaltation lasting an hour or two, in which the patient runs about, sings, dances, and talks incoherently.

There are forms of primary dementia which are more or less complicated with melancholia, stuporous paranoia, and neurasthenia.

Course and Prognosis.—The psychosis lasts from a few months to a year or more, and about three in five gradually recover. Most of those who recover show a defect of memory for what has occurred. Some cases recover incompletely, and some undergo an imperceptible transition into secondary dementia.

Diagnosis.—The chief difficulty in diagnosis lies in the differentiation of apathetic forms of melancholia from primary dementia. From the expression, attitude, gestures, and speech, one determines the existence of the anxious state or hallucinations which lie at the base of melancholia passiva or melancholia attonita. The history of the patient will distinguish congenital or acquired idiocy from this form of insanity.

Pathological Anatomy.—No physical basis has been established for this disease. It is regarded as a purely functional psychosis.

Treatment.—Mild cases may be treated at home under propitious conditions. At the same time, most of these patients are better off in asylums, where the discipline, regular life, and expert care favor speedy recovery. Rest in bed and overfeeding are requisite at first. Regular hydrotherapeutic measures are of value (at first short warm baths, later on showers and spinal douche). Medicines are of no especial value except in the episodic periods of excitement, when the bromids may be employed, together with hot wet-packs.

CHAPTER XI.

PARALYTIC DEMENTIA.

Synonyms.—Dementia paralytica; Progressive general paralysis; General paresis; General paralysis of the insane.

Definition.—Paralytic dementia, as its name implies, is a disorder characterized chiefly by progressive enfeeblement of the mind, together with a progressive general paralysis of the whole body. It is essentially a cortical disease, but its symptomatology is frequently modified by spinal complications. The psychic symptoms, in addition to the characteristic progressive dementia, present multiform phases, neurasthenic, hysterical, hypochondriacal, melancholic, maniacal, circular, paranoiac, etc. An expansive phase with delusions of grandeur is very common at one period or another in the course of the malady.

Etiology.—Intellectual overwork or strain, working on a foundation impaired by syphilis or alcoholism, or both, may be said to be the chief cause of general paresis. Heredity, undoubtedly, plays a part in the causation of this form of mental disorder, though perhaps not so great as in other classes of insanity. The rôle of heredity has been variously computed at from ten to forty per cent. As regards sex, it may be stated that on an average, among all classes of society, twelve times as many males as females are affected—the disproportion seems to be less among lower orders of people. The age of onset is usually during the fourth or fifth decad, bespeaking in general the climacteric period of human life. But general paralysis may be encountered at almost any age. Some fifty cases have been recorded as occurring in children. Occasionally late cases are met with after the age of sixty. It is a common disease in the great centers of civilization, where the intellectual stresses are most severe, and is comparatively rare among lower races. For instance, it is almost never observed among the native Egyptians.[1] The disease is more frequent among men of ability in professional or business life than among the ignorant and uncultured.

As regards the position of syphilis as an etiological factor, it may be said that a certain history of syphilis is obtainable in at least fifty per cent. of the cases, and it is probable that the true relation is considerably larger. Several years ago, in a study of this subject,[2] I examined the contributions of no fewer than seventy authors to the elucidation of this problem. There was wide divergence in the statistics presented; but from my examination of all these figures, it is fair to assume that between sixty and seventy per cent. of all cases of general paralysis are probably syphilitic.

By a comparison of statistics of the relation of syphilis to all other

[1] "The Insane in Egypt," by the author, "Med. Record," 1892.

[2] "The Relation of Syphilis to General Paresis," "Medical Record," Dec. 9, 1893.

forms of insanity, which I have estimated to be from six to ten per cent., we have the further fact that syphilis is seven to ten times as frequent in dementia paralytica as in insanity in general.

The fact is thus established beyond dispute that syphilis is a striking etiological factor in general paresis, but that thirty to forty per cent. of the cases are not syphilitic. It is, therefore, an important, but not exclusive, etiological factor.

A much more difficult problem is to determine the exact nature of the relationship between syphilis and general paresis. Is it a direct cause, or merely a contributing agent? Is it in syphilitic cases a post-syphilitic affection, or is foregone syphilis merely a predisposing factor? The problem may be examined from several standpoints. In the first place, we have the rather remarkable statistics of Lewin of 20,000 cases of syphilis, one per cent. of which became insane, and in which not a single case of general paresis developed. Then we have the further fact, to which I have already alluded, that among the native Egyptians, where syphilis is one of the most wide-spread of disorders, scarcely a case of general paresis has been reported; and in the asylums at Cairo, which I visited a few years ago, not one such case was to be found. It is significant, by the way, that alcoholism is seldom or never observed among them, the drinking of spirituous liquors being interdicted by the Koran. Such facts as these it is impossible to reconcile with a hypothesis ascribing to syphilis the direct causation of paralytic dementia.

Again, from the pathological standpoint, it is well known that the direct invasion of the brain by syphilis is characterized by changes in the blood-vessels (endarteritis obliterans), by the formation of gummata, or by diffuse meningeal infiltration (specific leptomeningitis or meningo-encephalitis). The first and third of these processes are most frequent in and about the base of the brain. The second is more common in cortical regions. On the other hand, in general paralysis we have a chronic meningitis of the convexity with atrophy of the cortex, and the processes in this disease and in syphilis are quite distinct, although there are cases in which a syphilitic meningo-encephalitis may closely simulate symptomatically dementia paralytica. The pathological processes are different.

There are some who assume that tabes and general paresis are frequently associated, and that tabes, being so decidedly a syphilitic disease (ninety per cent.), general paresis must, in consequence, originate from syphilis. The first part of this assumption is, however, not true; and if it were, there is a singular lack of correspondence between the percentages of syphilis in the etiological statistics of the two diseases. The conclusions reached by the writer in the study just referred to are as follows:

1. A history of syphilis is found in sixty to seventy per cent. of cases of general paralysis of the insane.

2. The fact must not be lost sight of that in thirty to forty per cent. of these cases no history of syphilis, congenital or acquired, is to be found.

3. Antecedent syphilis is seven to ten times more frequent in general paralysis than in other forms of insanity.

4. Syphilis is, therefore, to be looked upon as a frequent, but not constant, factor in its production.

5. But paralytic dementia is not a form of specific disease, not a late syphilitic manifestation, nor is it a form of degeneration depending upon the syphilitic poison for its origin.

6. The relationship of syphilis to general paresis lies in the facts that it is a wide-spread disorder in all communities, that it weakens the constitution and vitiates the blood in many whom it infects, and that the system is thus prepared in many cases for the direct operation of the final etiological factors of general paresis—viz., alcoholism, excessive venery, heredity, and mental overstrain and excitement.

Alcohol would seem to be a factor in some twenty per cent. of paretics. Other toxic agents (lead, tobacco, rheumatism, etc.) are also believed to take a part at times in the etiology. Trauma has often been mentioned as an occasional cause of paresis, but there is no well-authenticated instance in literature of such etiology, and until better evidence is offered we must doubt the sufficiency of this factor.

In most cases, as already intimated, several of the causes named are associated in the production of the disease.

Symptomatology.—The disease is best studied in its three stages —the prodromal period, the established disorder (which may be exalted, depressed, or hallucinatory), and the terminal period of dementia.

Prodromal Period.—General paresis is one of the most insidious forms of insanity as regards its gradual, almost unnoticeable onset. Very often this early stage presents symptoms which lead to its being mistaken for neurasthenia. Indeed, the earliest symptoms may be neurasthenic in character, or even a combination of hysteria with neurasthenia. Sleeplessness, tremor, irritability of mood, hypochondriacal depression, dull headache, ophthalmic migraine, pains in various parts of the body, general malaise, loss of appetite, and digestive disorders—these are the manifestations which may be readily misinterpreted as purely of functional nature. It is only when other symptoms in addition to these are presented that a suspicion of a more serious malady may be entertained or the diagnosis actually established. These symptoms are, on the mental side : little faults of memory ; errors in speech or writing ; the misuse of words ; the leaving out of letters, syllables, or words, or their reduplication in writing ; growing indifference to the higher sentiments ; loss of the critical faculty ; small lapses in the proprieties, and failure of interest in the more important affairs of life. As these mental features become more and more pronounced, the patient loses and mislays things, makes mistakes in money matters, errs in appointments, confuses persons and objects, forgets his way, becomes easily angered, markedly offends the proprieties, shows extravagance in the use of money, evinces distinct loss of the ethical feelings, exhibits proclivities to sexual and alcoholic excess, and becomes negligent of his dress.

In the earlier period the patient, like any neurasthenic, has a dis-

tinct consciousness of his own illness and observes his symptoms. But with the progress of the malady—and it is in this that we find an important contrast to the course of neurasthenia—he loses that sense of being ill, takes no further notice of his own symptoms. On the physical side there are a number of significant marks which are helpful in making an early diagnosis: defective innervation of one side of the face, causing a slight paralysis; transitory ocular palsies, diminished sensibility to pain, Argyll-Robertson pupils; diminished, lost, or exaggerated tendon-reflexes; a dark, pale, greasy complexion; lack of facial expression; jerky tremor of the faciolingual muscles at the beginning of voluntary movement; slight difficulties of articulation; rushings of blood to the head, and attacks of syncope or of mild or severe epileptiform convulsions. A number of other early symptoms have been described by various authors to which some value attaches: loss of memory of localization of tactile sensations (Ziehen); loss of the cremasteric reflex; testicular insensibility; peculiar respiration, with short inspirations, followed from time to time by prolonged sighing expirations (Régis); gastric and vesical crises (Hurd); calcification of the sternum, with incurvation of the xiphoid appendix and consequent interference with thoracic breathing (Régis).

Period of Establishment of the Disease.—When the disorder is fully established after a prodromal period which may range over months or years, it is marked by both physical and mental symptoms which are usually characteristic:

Chief Physical Symptoms.—(1) Peculiar articulation and writing—the "paretic speech" and "paretic writing"; (2) tremor; (3) pupillary disorders; (4) lost or exaggerated tendon-reflexes; (5) muscular weakness; (6) apoplectiform and epileptiform crises; (7) emaciation; (8) trophic disorders.

Mental Symptoms.—(1) Failure of memory for both recent and old events; (2) diminishing number of concrete, abstract, special and general ideas; (3) weakening of judgment; (4) loss of sense of time and place (lack of orientation); (5) delusions (marked by enormous exaggeration, whether exalted or depressed); (6) hallucinations and illusions; (7) emotional irritability; (8) exalted, sometimes depressed, mood; (9) loss of ethical and esthetic feeling.

We will now examine these symptoms somewhat in detail.

The paretic speech is so characteristic that, heard a few times, it is always remembered; yet it is difficult to describe. There are shades of difference in various individuals, so that authors qualify the disorder of speech as drawling, stammering, hesitating, scanning, spasmodic, ataxic, and so on. It has some resemblance to the speech of a drunken man. Doubtless the main seat of the lesion affecting the speech of the paretic is in the cortical motor speech-center, but sometimes the lesion is probably in the bulbar centers connected with the elaboration of the motor impulses requisite to articulation. The jerky tremor or ataxia of the speech-muscles, together with incoördinated impulses from the cortical motor speech-center, is responsible for the peculiarities in speech. Labials and certain consonants are the most difficult for the

paretic to enunciate, and the typical speech is shown in the attempt to pronounce such words or phrases as "electricity," "artillery and cavalry brigade," "immovability," etc., in which the consonants may be left out, drawled over, misplaced, or even reduplicated thus: "electericity," "artillilery," "bigrade," "immobilty." As the disease advances, the words are run more and more together, until finally the speech is utterly incomprehensible.

The handwriting of the patient is of equal, and in the earliest stages even of greater, importance. Lapses of words, repetitions of words or even sentences, and especially elisions and reduplications of letters or syllables are extremely significant.

The tremor in paretics affects all parts of the body, but is especially noteworthy in the face and tongue. In the tongue it often takes on a fine, fibrillary character. It is very rare in even pronounced neurasthenic conditions to observe tremor of the facial muscles. Still we do meet with it at times, and the distinction that I would draw between the facial tremor of profound neurasthenia and that of paresis is that in the latter disorder there is a peculiar jerkiness and ataxia in the tremor, especially at the beginning of a voluntary movement. Thus, in asking the paretic to wrinkle his forehead, an ataxic tremor will be set up in the occipitofrontalis. In snarling up the nose, it is observed in the small muscles about the cheek and nose. In showing the teeth, the ataxic tremor becomes marked in the levators of the lip. In protruding the tongue, there is a rapid, jerky tremor at the beginning of the movement.

As regards the pupils, the most important sign is absence of the reflex to light. Next in order comes extreme miosis (pin-hole pupils), and next in importance a variable inequality (one pupil being larger at one time and the other at another time). Irregularity of outline of either or both pupils is significant. Simple inequality of the pupils is less distinctive because met with in other forms of insanity, and occasionally in normal persons. Marked mydriasis is very common in the latest stage of the disease.

In tabic forms of the disorder the knee-jerks are diminished or lost. In all other forms the tendon-reflexes are apt to be enormously exaggerated, so that we get not only extreme knee-jerks, but quadriceps clonus, ankle-clonus, jaw-jerk, jaw-clonus, and extreme wrist- and elbow-jerks. With this spastic condition we observe also considerable rigidity of the muscles, with a tendency in the latest stage to marked contractures. Often in tabic forms, when the knee-jerks are at first lost, they become finally exaggerated. Hence, while the term tabic is often used to describe a form of paresis in which we have lost or diminished knee-jerks, together with Argyll-Robertson pupils, this is simply a descriptive designation, and does not necessarily imply that we have a combination of locomotor ataxia with paresis.

As previously stated, one of the chief symptoms of paralytic dementia is a progressive weakening of the muscles in general of the whole body. It is rather an enfeeblement than a paralysis. It is manifested mainly by localized pareses in various muscles or groups of

muscles. These are often noted as early symptoms—for instance, in the eyes and face. In fully one-half of the cases we observe, at one time or another, weakness of some of the ocular muscles, not infrequently giving rise to diplopia or ptosis, rarely nystagmus. A certain amount of ptosis is often seen, and the overaction of the occipitofrontalis in consequence forms a striking picture in many cases. One-sided paresis of the forehead muscle, orbicularis palpebrarum, or lower face is rather common. The muscles about the mouth are particularly often involved, so that marked inequality of the nasolabial fold and of all of the oral movements is encountered. The speech has frequently a nasal tone from one-sided or double palate paralysis. Deviation of the tongue is common. The general strength of the extremities, as measured by dynamometers, is diminished, sometimes on one side more than on the other, presenting the picture of a hemiparesis. The want of equal innervation is sometimes indicated by the attitude of the patient, the inclination of the body to one side or another, backward or forward, sinking of the head on the breast, etc. Weakness in the muscles of deglutition leads to difficulty in swallowing. The peculiarity of most of these paralytic phenomena is, in the first place, their mildness of degree, and, in the second, their frequently transitory character (the weakness may be first on one side of the face, then on the other, now about one eye, now in an extremity, etc.).

Nearly every case of general paresis exhibits, at some time in its course, convulsive or apoplectiform seizures. Usually these critical episodes occur at the height of the disorder or in its final stages, but occasionally they are among the very earliest symptoms. For instance, one case that came under my observation began with a transitory hemiplegia following an apoplectiform attack. Up to the day before this seizure he had performed his difficult duties as an accountant in a large railroad organization to the perfect satisfaction of his superiors, and none of his family had observed any indication of prodromal symptoms. He died as a typical paretic a year later. Another case, much the same in many ways, began with general epileptiform convulsions extending over twenty-four hours. The attacks may appear in the form of syncope, or coma, or aphasia. A peculiarity of all of these crises is their transient character, and as even in cases terminating fatally in such attacks often no lesion has been found, their pathogeny has been ascribed to congestive conditions or to circumscribed edemata in various areas of the brain. As a rule, mental failure becomes more apparent after these crises.

Rapid emaciation is usual after the disorder has actually set in,—that is, at the termination of the prodromal period,—but later on, after the climax has been reached and dementia becomes more apparent, patients often gain largely in flesh.

Among the trophic disorders we note especially bed-sores, which appertain mostly to the terminal condition. In some of the cases a true trophoneurosis is the cause, and in others weakened peripheral circulation and uncleanliness. A striking fragility of the bones is common in general paresis, which accounts for numerous accidents in asylums, such

as fractures of the ribs and other bones, exploited so often in the newspapers as due to the assaults of attendants. I have known a maniacal paretic to break all of the small bones of his hand by pounding on a door. Hematoma of the ear is very frequent in paralytic dementia, and this must be ascribed to trophic changes in the vascular walls, permitting some trivial trauma to cause a rupture in the vessels of the perichondrium. The hair frequently becomes rapidly gray in paresis, and this, too, is doubtless a trophic symptom.

Among other physical symptoms occasionally met with are to be mentioned changes of temperature, alluded to in the chapter on General Symptomatology, intermittent albuminuria, propeptonuria, glycosuria, acetonuria, polyuria, impotence, and vesical and rectal weakness. Glycosuria is sometimes an early symptom.

As regards mental symptoms, the gradual and progressive failure of memory, and, as a consequence, the progressive depletion of the store

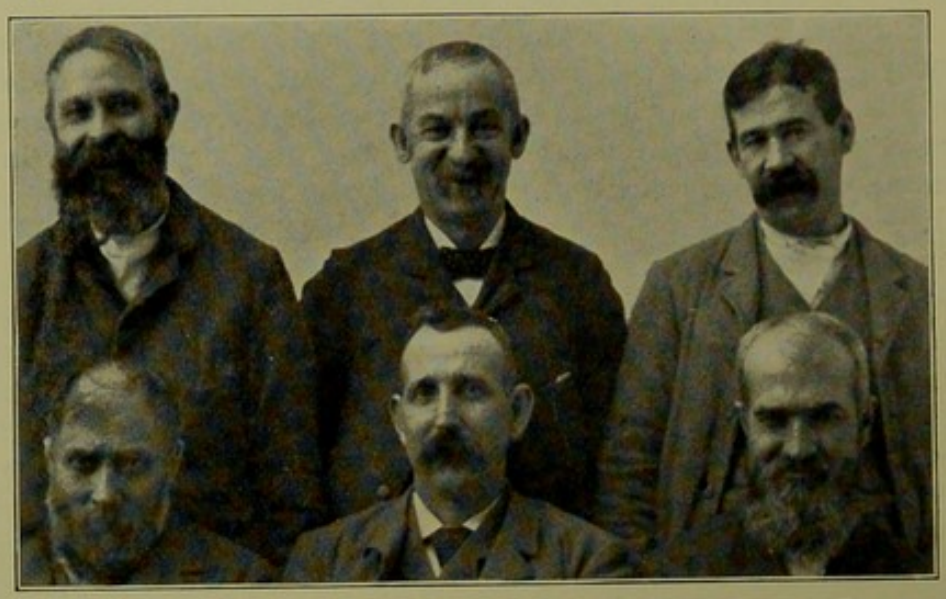


Fig. 278.—A group of paretics. Taken to show exalted and melancholic phases (Dr. Atwood).

of memory-pictures, ideas, idea-associations, and judgment-associations, are the most noteworthy features of the disease. The most complicated conceptions, as well as those acquired latest, are the first to disappear. Abstract ideas, owing to their complexity, are the earliest to go. The patient loses his memory for dates, for the events of to-day and yesterday, and finds difficulty in remembering his appointments and duties. A very early loss of the power of mental computation is notable. With the progress of the malady, even the older memories and concrete ideas vanish by degrees. The patient comes to have no knowledge of time, the place where he is, or of the friends who surround him. The loss of the faculty of judgment is evident at an early period in his failing observation and comprehension of his own symptoms. Ordinarily there is a retardation of the flow of ideas, particularly marked in the melancholic type of the disease. In the exalted type there is an acceleration of the flow of thought, which is given a special color by the mental enfeeblement.

There are cases which run their course without delusions, the symptoms then being merely the progressive dementia with advancing physical debility. But in a considerable proportion of paretics delusions are manifested, usually of grandiose character, associated with more or less ideomotor excitement (sometimes approaching the maniacal condition), and occasionally of melancholy character. The grandiose ideas of male patients are concerned with wealth, power, glory, size, strength, position, possessions, and of female patients with dress, finery, jewels, and children. At an early period these grandiose ideas are not to be distinguished from the similar fancies of many cases of ordinary acute mania. But when the judgment becomes weakened, as it inevitably does, a peculiarly distinctive character is given to the paretic's delusions. The grandiose delusions take a magnitude, an enormity, a stupendousness not observed in any other form of insanity. Wealth is counted in decillions of worldfuls of gold. The patient is czar, king, president, queen, God, at the same time. His penis is a mile long, his testicles large diamonds. He will bring the Pacific Ocean over the Andes to make the largest waterfall in the world. He will move the asylum buildings on a road of gold to Washington. He has thousands of wives, every one of whom bears two hundred children nightly. He bestows on his physicians and nurses royal orders, dukedoms, writes them checks for enormous sums of money, etc. When the mood of the patient is hypochondriacal or melancholic, the delusions retain the same element of enormity despite their unhappy contents. He states that he is impoverished by having lost billions of dollars; he is committed to prison for thousands of years; he weeps because he can not do his duty to the nations which he governs; there is some horrible condition of his bowels which requires the most awful of operations, etc.

There are some cases of general paresis which exhibit alternating phases of melancholic depression and ambitious exaltation, and these are described as paralytic dementia of circular type.

Hallucinations and illusions are frequently observed in general paresis. They have more or less relation to the condition of exaltation or depression present and to the delusions manifested. Auditory hallucinations are the most common. They are noted even in the early periods of the disease, but are generally a part of the maximum period. They are absent in the final stage.

Emotional irritability and changeability are generally evident. The patient laughs or weeps easily, and is often readily angered.

The excesses, sexual and alcoholic, lapses of propriety, etc., are significant of loss of esthetic and ethical sensibility. He indulges himself freely and without morality (though previously moral), drinks immoderately, steals, and squanders his own and others' property. As his character sinks lower and lower he commits all sorts of shameless offenses against decency.

Before passing on to the final stage, we not infrequently encounter, in the course of the disorder, peculiar interludes of recession of all of the symptoms. These are known as remissions. Remissions last from

several weeks to several months, as a rule, occasionally for a year or more. Very striking at times is the remarkable improvement to be observed in a remission. This may attain to a degree making it almost impossible to discover any vestige of deviation from the patient's normal mental health. The extraordinary delusions disappear, the maniacal or melancholic mood vanishes, the symptoms of confusion and forgetfulness pass away, and noteworthy intellectual lacunæ are filled again. The patient may return to his affairs. It is very rarely that marked physical stigmata of the disorder diminish and give place to normal conditions. After a time the old symptoms of the dread malady reassert themselves and its fatal progress is rebegun.

Terminal Period.—As already intimated, there are cases in which there is merely a progressive enfeeblement of mind and paresis of body from beginning to end, with none of the excited or depressed conditions, delusions, hallucinations, remissions, etc., just described; cases which pass by gradual stages from the prodromal into the terminal period. In the main, however, we have most of these other manifestations interpolated. The final stage is often ushered in by the convulsive or apoplectiform seizures. This is the stage of more or less complete dementia. We may still note the remains of old grandiose or hypochondriacal delusions in the scarcely comprehensible mumblings of the paretic dement, but usually the mind becomes completely vacuous; the patient speechless, filthy in his habits, bedridden, and more helpless than an infant. He lies in bed, either motionless or restlessly moving his limbs and grinding his teeth. He can scarcely swallow his food, and often requires to be fed to prevent strangling. He wets and soils himself, and bed-sores and contractures develop. Finally, death by inhalation-pneumonia, septicemia (from the bed-sores), cystitis, marasmus, intestinal catarrh, or exhaustion steps in to draw the curtain on the distressing picture. Not a few die at an earlier period in an epileptiform or apoplectiform crisis.

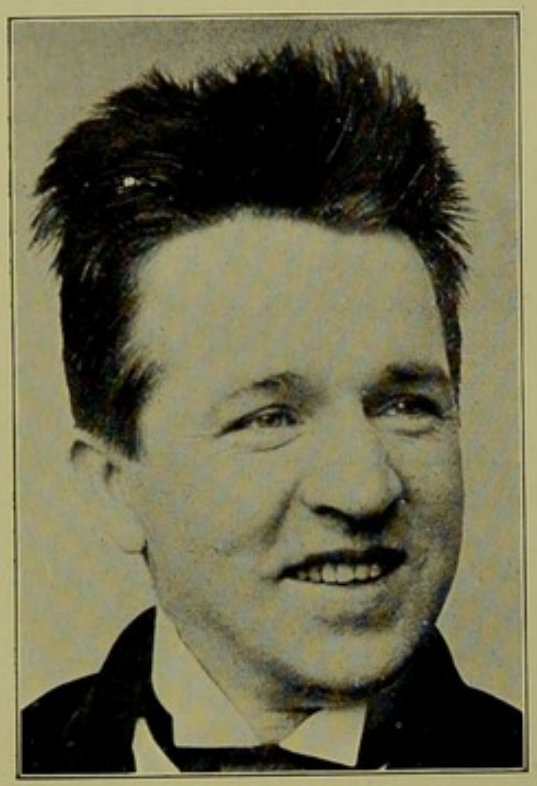


Fig. 279.—A noted actor who recently died of paresis. Taken to show the expression of paralytic dementia in an unusually expressive face (loaned by Dr. Atwood).

Duration and Prognosis.—Paralytic dementia runs its course in three to five years, on an average. There are more cases which terminate under three years than over five, but cases lasting five years are not infrequent. A duration of ten years is among the greatest rarities.

The prognosis is practically always death within a short term of

years. The author has never known personally of a case recovering. In our whole literature there are, according to Ziehen, but a dozen cases of recovery on record. It is probably questionable if even these were genuine cases of paresis, since an error in diagnosis is not at all uncommon.

Diagnosis.—The chief disorders which may be confused with paralytic dementia during the various stages of its evolution are neurasthenia, alcoholism, syphilis of the central nervous system, acute mania, epileptic dementia, paranoia, or secondary paranoia with delusions of grandeur, multiple sclerosis, and mental conditions associated with common organic lesions of the brain (tumor, hemorrhage, embolism, thrombosis). In atypical cases the diagnosis is often difficult and sometimes even impossible.

As regards neurasthenia, it is only in the prodromal period of general paralysis that differentiation may be difficult. I shall attempt to present in brief, tabular form the distinctive diagnostic points of these two conditions:

General Paresis (Early Period).	Neurasthenia.
Sluggish, immobile, irregular, pin-hole, or unequal pupils.	Large and rather active pupils usually.
Diminished, greatly exaggerated, or unequal knee-jerks.	Active and equal tendon-reflexes.
Fibrillary tremor of tongue; jerky, ataxic tremor of fingers, face, tongue, occipitofrontalis.	Tremor fine and rapid of fingers and eyelids, not jerky, very rarely involving face, almost never the tongue and forehead.
Elision or reduplication of letters, syllables, or words in writing.	Nothing abnormal in the writing.
Sometimes noticeable characteristic defects in speech.	No changes in enunciation.
Usually little or no notice taken by the patient of his symptoms.	Patient pays marked attention to his symptoms.
In some cases a feeling of cheerfulness and well-being out of proportion to the actual disorder present.	Patient apprehensive and alarmed at any symptoms present.
In many cases a vague, hypochondriacal depression with tearfulness, not referred to any definite physical cause.	When hypochondriacal, patient's attention fixed on some definite morbid process which he believes to be going on in his system.
Actual evidence generally found of failing memory, defect of intellectual process, weakened judgment, and loss of esthetic and ethical feeling.	No evidence of mental decay or loss of esthetic and ethical feeling.
Occasionally epileptiform or apoplectiform crises.	Nothing of this kind in neurasthenia.
Vertiginous attacks and transitory aphasia of mild degree.	Not present in neurasthenia.

In chronic alcoholism we may have presented to us many symptoms, such as tremor, thick speech, mental changes and defects, epileptiform crises, and, where rudimentary polyneuritis is present, lost knee-jerks, which may simulate the syndrome of paralytic dementia. The resemblance is sometimes remarkably close. The chief differential point is the great improvement and often recovery which take place in alcoholic mental disorder on withdrawal of the alcohol. With abstinence

the speech becomes normal, the tremor grows less or disappears, the knee-jerks return, epileptiform attacks cease, defects of memory are no longer perceptible. If hallucinations are present, they are more often visual and zoöscopic in alcoholism, while generally auditory in paresis. The delusions of the chronic alcoholic are, as a rule, suspicious and persecutory. It must be remembered that a typical general paresis may, however, develop on the basis of a chronic alcoholism.

Aside from the comparison of neurasthenia with the prodromal period, probably the mistaking of syphilis of the central nervous system for advanced general paralysis is the most common error in diagnosis. The two disorders have so much in common that their differentiation is often only possible by prolonged observation through the whole course of the disease; and if the paretic dementia should happen to progress as a simple dementia with none of the characteristic episodes, the diagnosis is sometimes quite impossible. The following table will serve to make some of the similar and unlike features of the two maladies apparent:

General Paralysis.	Cerebrospinal Syphilis.
Paresis of mild degree of cranial nerves at times. Slow in onset and transitory.	Complete paralysis of one or several cranial nerves often. Generally sudden in onset and stable.
Symptoms of a diffuse general lesion.	Symptoms of multiple lesions.
Jerky and ataxic tremor.	No tremor in syphilis.
Loss of iris reflex to light, preservation of movement of iris in accommodation (Argyll-Robertson pupil); extreme miosis.	Iris often immobile both to light and in accommodation; extreme miosis very infrequent.
Characteristic elisions and reduplications of letters, syllables, or words in writing.	If any change in writing at all, due to agraphia or dementia. No resemblance of the changes to those of paresis.
Peculiar disorder of speech. (G. P. speech.)	No speech disorder usually, but, if any, due to organic aphasias of one kind or another. No resemblance to the G. P. speech.
Headaches vague, transitory, and seldom distressing.	Headaches extremely severe, constant, and worse at night.
No material changes in the fundus.	Optic neuritis occasionally.
Progressive advance of the disease to a speedily fatal termination, with a possible remission in some instances for a brief period.	Irregular advance, with many fluctuations in intensity and character of the symptoms, extending over a long period of years, and not necessarily fatal.
Delusions often expansive, sometimes depressed, characterized by enormous exaggeration in either case.	Delusions rarely present.
Affective state often expansive, sometimes depressed.	Affective state usually depressed or apathetic.
Progressive mental enfeeblement.	Incoherence and thought-inhibition.
Epileptiform and apoplectiform crises in nearly every case, and frequently repeated.	Epileptiform and apoplectiform seizures uncommon, but if they do occur, are generally single, isolated attacks.
Antisyphilitic remedies useless.	Antisyphilitic remedies of marked service.

A gummatous meningitis may, however, present a typical general

paresis in all its manifestations, and there are cases in which the actual lesions of paresis exist side by side with syphilitic cerebral lesions.

We may have maniacal outbursts in the course of general paresis. Indeed, I have seen paresis begin in a number of instances as an apparent acute mania. During this maniacal state the chief means of differentiation of the two disorders is in the character of the contents of the delusions. Both are exalted and expansive and tend to the same general exaggeration of feelings of power, strength, intellectual and physical abilities, wealth, social station, etc. But the stupendous exaggeration in general paresis is never observed in acute mania. This is a valuable indication. Naturally, if any of the physical signs of paresis are present, the diagnosis is not difficult.

Epileptic dementia, with its slow speech, mental defect, and epileptic seizures, might at times be mistaken for a paralytic dementia, presenting chiefly these symptoms. But the history of long years of epilepsy preceding the psychic degeneration suffices, as a rule, for the diagnosis. It is only when such history is not obtainable that error might arise.

In paranoia itself, and in paranoia secondary to acute mania or melancholia, the expansive or depressed delusions are of a more fixed and much less exaggerated nature. A study of the character of the delusional contents should make differentiation easy.

Multiple sclerosis, with its jerky tremor, exaggerated reflexes, and mental enfeeblement might at times present a syndrome analogous to that of some cases of paralytic dementia. The tremor of multiple sclerosis, however, while also jerky and ataxic, is a marked intention tremor, exhibiting wider and wider excursions the greater the effort to carry on a voluntary movement. The tremor of paresis, on the other hand, shows no such increasing exaggeration on voluntary efforts to use the muscles. In sclerosis, the head is often involved in the tremor; in paresis, never. Nystagmus, so common in sclerosis, is almost never observed in paresis. The dementia of sclerosis, when present, is slight and not especially progressive, and there are no expansive or depressed delusional episodes, such as characterize paralytic dementia.

Focal brain-lesions (tumor, hemorrhage, softening, etc.) with dementia and paralysis may simulate somewhat certain types of general paralysis, but the progressive character of the latter disorder, with its crises and psychic episodes, should serve to give the condition presented definite outline and character.

Pathological Anatomy.—It is usual to describe the pathological condition underlying paralytic dementia in general terms as a diffuse meningo-encephalitis. The gross changes observed at autopsy are as follows:

1. General diminution of weight of the brain.
2. Increased fluid in the subdural space and in the meshes of the arachnoid (external hydrocephalus).
3. Pachymeningitis hæmorrhagica interna, with large, fresh, or old hematomata of the dura mater (in about half of the cases).
4. Chronic leptomeningitis (opacity and thickening, with adhesion of the membranes to the cortex).

5. Narrowing of the cortex, with gaping of the fissures.

6. Distention of the ventricles with serum and granulated and thickened ependyma (chronic internal hydrocephalus).

7. Gray degeneration in the centrum ovale, brain-axis, in various columns of the spinal cord, and in some of the spinal roots and peripheral nerves.

The microscopical findings may be summarized briefly as follows :

1. Changes in the vascular walls, dilatation of the perivascular spaces, wandering white and red blood-corpuscles.

2. Increase in number of the astrocytes.

3. In the ganglion-cells : loss of the nucleus and nucleolus, cloudy swelling, shrinking of the protoplasmic processes.

4. Degeneration and disappearance of the nerve-fibers with myelin-sheaths, in the white matter and in the cortex, and of the tangential fibers.

The whole cortex is more or less affected, but often the changes are more marked in one area than in another. It is usual to find the frontal lobes especially implicated.

Treatment.—In the majority of cases of general paresis commitment to an asylum is necessary, owing to the dangers arising from the patient's excesses. He may squander his property or scandalize his family by his immoral or criminal acts. It is true that cases which present merely the dual symptomatology of increasing physical debility with progressive mental enfeeblement may be, and often are, treated at home. But, on the whole, it is better to act promptly in placing the patient in a place of safety.

The disease being inevitably fatal, there is little to be advised in the way of medication, save symptomatic treatment. It is quite proper, in cases with a history of syphilis, to try energetic antisyphilitic measures—mercurial inunctions and large doses of iodid. If, by any possibility, there has been any confusion of the malady with cerebral syphilis, this will at least serve to remove any doubt. The opium treatment is of value in the periods of depression, and hyoscin, hyoscyamin, or duboisin (gr. $\frac{1}{100}$ to gr. $\frac{1}{60}$), hypodermatically, in the periods of maniacal excitement. Where epileptiform seizures are frequent the bromids are indicated, and in status epilepticus chloral and starch-water per rectum (gr. xv to ℥j of starch water). Chloral combined with morphin is to be recommended in phases marked by hallucinatory excitement.

Little or nothing is to be expected from the many measures advocated by various authors : setons and vesicants to the nape of the neck, painting the neck with iodin, hydrotherapy, physostigmin, ergotin, and trepanation.

Trephining has been resorted to a number of times in the past six or eight years, but seems to have been abandoned as useless. The theory that led to its use was that there might be increased intracranial pressure, but this theory has been discarded for want of evidence.

When dysphagia is present, the patient may require feeding with the tube. In the terminal period of the disorder catheterization and careful efforts at preventing bed-sores are required.

CHAPTER XII.

PARANOIA.

Synonyms.—Chronic delusional insanity; Progressive systematized insanity; Primare Verrücktheit; old term, "Monomania."

Definition.—Paranoia may be defined as a progressive psychosis founded on a hereditary basis, characterized by an early hypochondriacal stage, followed by a stage of systematization of delusions of persecution which are later transformed into systematized delusions of grandeur. Though hallucinations, especially of hearing, are often present, the cardinal symptom is the elaborate system of fixed delusions.

The hypochondriacal stage is called by Régis "the period of analytic concentration"; the second stage, "the period of delusive explication"; the final stage, "the period of transformation of personality."

Varieties of Paranoia.—There is one typical form of paranoia to which the main portion of this chapter will be devoted, because it is the type which will be most readily recognized by the student and general practitioner. But there are incomplete or immature forms and atypical variations, which the special student of morbid psychology learns in the course of time to distinguish. Thus, many of those eccentric or queer individuals whom we call "cranks" are rudimentary or undeveloped cases of paranoia. Some idea of the varieties of paranoia noted by authorities may be gathered from the attempts at classification by different writers. For instance, French and Italian authors are inclined to divide paranoia into two great groups—viz., (1) degenerative, with original and late subvarieties, according to the period of life at which the insanity develops; (2) psychoneurotic, with primary and secondary subvarieties, according to whether it develops primarily or secondarily to another insanity.

Ziehen classifies paranoia into two great groups, according to the predominance of either delusions or hallucinations—where hallucinations are the most prominent symptom, he terms the psychosis paranoia hallucinatoria; where delusions are preëminent, he denominates it paranoia simplex. Either form may be acute or chronic. Hence he makes four chief types: (1) Paranoia hallucinatoria acuta; (2) Paranoia hallucinatoria chronica; (3) Paranoia simplex acuta; (4) Paranoia simplex chronica.

This last form is the name given by Ziehen to the complete typical form of paranoia which is described in this chapter, and which he describes as having four stages (prodromal, persecutory, expansive, and pseudodemented). Ziehen also specifies several varieties of acute hallucinatory paranoia—viz., the fleeting-idea form, the stuporous, the incoherent, the exalted, and the depressive forms.

Krafft-Ebing makes two great divisions—original paranoia, appear-

ing in early childhood or before puberty, and acquired (*tardive*) paranoia, appearing between the ages of puberty and sixty years. The latter class he subdivides as follows:

(A) Paranoia persecutoria: (1) the typical form; (2) subtype (paranoia sexualis); (3) paranoia querulans.

(B) Paranoia expansiva: (1) paranoia inventoria and reformatoria; (2) paranoia religiosa; (3) paranoia erotica.

Etiology.—Heredity is a more important etiological factor in paranoia than in any other form of insanity. Krafft-Ebing states that he has never seen a case without hereditary taint. Tanzi and Riva found in their cases of paranoia 77 per cent. of heredity and 9.5 per cent. of infantile cerebral disorders, while in the remaining 14 per cent. hereditary factors could not be ascertained, but were not, of course, excluded. It is more common in females than in males. It affects by preference individuals who are even from childhood peculiar, morbid, shy, irritable, mistrustful, and misanthropic. It is very common to find, in cases of paranoia, some of the various stigmata hereditatis described in the chapter on Etiology, such as cranial or facial asymmetry, malformations of the ear or palate, etc.

Symptomatology.—We will examine the symptoms of the different stages in the order of their development. In the *prodromal period*, the hypochondriacal stage or period of subjective analysis, as it has been variously termed, which may have its conception in early childhood, the patient is morbidly shy, peculiar, eccentric, avoids the companionship of others, and is prone to withdraw himself into the solitude of his own thoughts. The physiological commotion of puberty and adolescence, with its inflow into consciousness of innumerable new sensations, its flood of new instincts, powers, ambitions, and ideas, tends to intensify the morbid proclivities already evident. The patient notes his own peculiarities of conduct, and begins to recognize the singularity of many of the somesthetic sensations which come to him—sensations which at this time might well be considered more or less neurasthenic in character: paresthesias of the head, trunk, viscera, and limbs; pains in various parts of the body, tinnitus aurium, sparks and dots before the eyes, and the like. The unnaturalness of these sensations leads to his spending much time in contemplation of them, so that a hypochondriacal complexion is given to his thoughts. To these physical sensibilities are now added a consciousness of difficulty in the concentration of his thoughts; a difficulty in the proper control of the direction and subject matter of his thoughts. He becomes extremely introspective, and, the more he studies the somesthetic sensations brought to his attention, the more he contemplates the phenomena of the uncontrollability of his thoughts, of their rising unbidden from his subliminal consciousness, of the unrestrained constellation of his presentations, the more is he inclined to search for some cause of his morbid condition. At first, like an ordinary hypochondriac, he investigates himself to find a solution of the problem, and, failing in that, he extends the region of his observation to his environment, seeking there the reason of his strange feelings, general disquietude, and morbid stream of thought. He be-

comes wholly preoccupied with himself. He can not employ himself, either physically or mentally, as he should. He fails in his duties—in everything he undertakes. People seem strange to him in their conduct and in what they say. He grows suspicious and distrustful of everything and everybody. What is done and said by others appears to have some significant relation to himself. People alter in their conduct toward him, look at him curiously, smile sarcastically when he passes, wink at or make signs to one another when he is near; make observations among themselves which, overheard by him, are construed as having a double meaning, as being derogatory to him, reflecting on his character. The more he studies the extraordinary condition of affairs, the more gloomy, solitary, and self-absorbed he becomes. Naturally, the growing alteration in himself really does provoke the notice of others—a fact which tends to intensify his ever-increasing suspiciousness of concealed animosity among those with whom he comes in contact. Many things in his past life rise up in his memory to find a new interpretation in the light of his present general distrust. His physical sensations have become more marked, have taken on a new character, have altered from paresthesias to illusions, and even hallucinations, of general or special sensibility. He feels peculiar general sensations, shooting pains, sudden prickings in his skin. Unusual and unpleasant odors or tastes harass him. Extraordinary sensations flow into consciousness from his genital organs. Much more serious and remarkable, however, are the peculiar changes in his auditory perceptions. At first these are usually confused noises, or roaring and tinkling sounds, with the gradual perversion of sounds and words heard into illusions colored by the suspicious contents of the patient's consciousness; later, actual hallucinations of hearing, which become a fixed and permanent feature of his malady.

The patient now enters into the second or *persecutory period* of paranoia, the period of delusional explication of his troubles. He has arrived at what he conceives to be a logical result of his reasonings, a rational explanation of the distress and affliction he has undergone. Everything he has suffered has been due to the machinations of unknown enemies. The delusions of persecution are at first somewhat confused in character. No particular individual or group of individuals is thus far responsible for the inflictions. It is simply some unknown persons who take pains to manifest ill-will or malevolence toward him. "They" talk against him, call him names, attempt to poison him with gases or by tampering with his food, and try to injure him with electric shocks or by throwing corrosive substances at him. Since wherever the patient may be, wherever he may go, the voices, shocks, poisons, etc., seem to pursue him, he comes to think that no single person could manage so vast a conspiracy. It must be some large aggregation of persons who are concerned in the effort to humiliate, cripple, or destroy him; an aggregation bound together by ties of secrecy, and able to permeate all classes of society. What could such body be but a secret society, an order of Masons or Odd Fellows; some religious or political brotherhood—the Jesuits, Catholics, Protestants, anarchists, or police.

Perhaps some one individual is at the head of the band of plotters, some arch-conspirator, but the work is done by innumerable *aides*, who employ all manner of means and apparatus to accomplish his ruin. This system of persecutory ideas is built up in the most elaborate way, and the more educated the individual suffering from paranoia, the more wonderful the organization and adjustment of the various parts of the delusional system. The persecutory delusions of other forms of psychoses, such as toxic insanity, senile dementia, and melancholia, may have a certain interest and fixity, but those of the paranoiac are woven together like a romance. The relation of the former to the latter is that of the brief sketch to the serial novel. The telephone, the phonograph, telepathy, hypnotism, and other and more mysterious apparatus and phenomena are brought into service by the relentless league. I do not know the origin of Du Maurier's conception of his novel, "Peter Ibbetsen," but I suspect that many of its unique features, especially that of "dreaming true," were suggested by conversations with some well-educated paranoiac in a lunatic asylum.

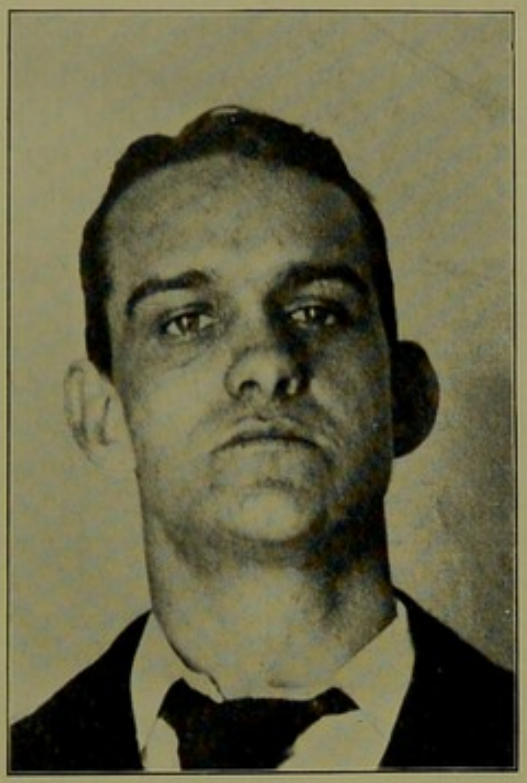


Fig. 280.—Young paranoiac with homicidal tendencies at period of passing from persecutory into grandiose stage (Dr. Atwood).

Many patients seek in a most elaborate way to explain one peculiarity of their auditory hallucinations—viz., the fact that their thoughts are read off by the voice or voices simultaneously with the appearance of the thoughts in consciousness. This adds naturally a new terror to the persecution, for the ability of the conspirators to read off and taunt the patient with his own most secret thoughts is a particularly refined species of deviltry, as well as evidence of the extraordinary psychological power of his tormentors. The voice which speaks his thoughts, or answers his thoughts before he can himself utter them, may be referred to the external world or to some part of his own body. This phenomenon has been variously termed echoing of the thoughts, motor representation of articulation, and verbal psychomotor hallucination. It depends upon the close relation existing from earliest infancy between the auditory word-center and the motor speech-center. Any irritation of this auditory area is immediately, synchronously, irradiated to the motor speech-center. However slight this stimulation of the speech-muscles, recurrent sensations of movement in them are carried back to the brain, giving rise to the hallucinations of internal hearing.

The patient is driven by his delusions to make complaints to the

police, to judges, or to the governor of the State, the President, or other government or judicial authorities. Not infrequently he attempts, himself, to wreak vengeance upon one or more of his imaginary enemies. Attempts at homicide are, therefore, common in these cases. The writer had in his charge at the Poughkeepsie Asylum, for some years, Ernest Duborgue, a persecutory paranoiac, who, many years ago, ran through Fourteenth Street, New York, stabbing women right and left with a pair of compasses. More often they seek to escape from their enemies by constant change of residence.

The third stage, the *expansive period*, or the period of transformation of personality, is often induced by the patient's attempt at a logical explanation of the cause of the persecution. Since he has so many enemies, and every man's hand is against him, it must be due to his importance. He either resembles some distinguished personage or he is of royal or god-like descent. The transformation may be suddenly induced by a hallucination revealing to him his high estate. The contents of these delusions of grandeur may be religious, political, erotic, jealous, and so on. For instance, the delusion of being a prophet or a second Messiah is very common (paranoia religiosa). The delusion of being a great discoverer or inventor is frequently met with (paranoia inventoria). Another common delusion is that of being a great social reformer (paranoia reformatoria). A peculiar form is paranoia erotica, in which a person imagines him- or herself to be beloved by some one of superior station. It is a romantic, platonic love in which the patient indulges. He has communications with the object of his delusions, imaginary conversations, through the medium of hallucinations. A good example of this form was that of Dougherty, who followed Mary Anderson all over the country, and was finally sent to an asylum because of his threats to kill any one who interfered with his attempts to gain a personal interview with the famous actress. Measurements which I made of his head showed a pathological excess in the height of the skull.[1] After his commitment to an asylum he shot one of the physicians who had him in charge. Another interesting variety of paranoia is that observed in the litigationists (paranoia querulans), who occasionally distinguish themselves by their lifelong involvement in legal processes (due to an overwhelming egotism, which leads to a continual zealous effort to set themselves right, despite the advice of friends, and the wasting of their property, after the

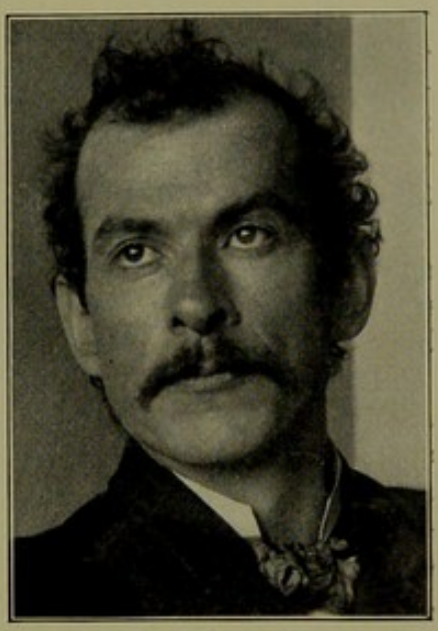


Fig. 281.—Erotic paranoia. "Mary Anderson's lover" (see text).

[1] "Familiar Forms of Nervous Disease," by M. Allen Starr, New York, 1890. Article on "Paranoia," by F. Peterson, page 299.

loss of some possibly trivial lawsuit). Pretenders to thrones, self-styled kings, presidents, princes, and so on, are often noted among paranoiacs who have reached this third stage of evolution. Quite commonly persecutory ideas still remain in the minds of these patients in association with the delusions of grandeur.

Each of these periods of development may last for several years, the disorder may undergo arrest at any period, and there may be variations in the degree of development of any stage; so that we constantly meet with atypical forms of paranoia. An excellent condition of memory, judgment, and intellect in all other directions save in those related to the single cluster of delusions may coexist. Years ago these cases were designated as monomania, because of the apparent lucidity of the patient outside of the limited number of fixed ideas. Many paranoiacs have distinguished themselves in sacred and profane history, and even in literature. There have been many of these false prophets who have come to herald a new religion—Mahomet, Swedenborg, Johanna Southcott, John of Leyden, John Thom of Canterbury, and Jeanne d'Arc. We have had them even in the United States within a few years—the healers exploited by the press. Among political reformers we had John Brown and Guiteau. A famous paranoiac immortalized himself in his autobiography—Benvenuto Cellini.

I have in my possession a beautifully written manuscript—the autobiography of a paranoiac. He was so dangerously insane that he spent much of his life in the asylum in which he wrote this valuable work.[1] The volume, bound by himself, is entitled "The Piling of Tophet," which is significant of the sufferings he had undergone in his unhappy life. I believe no better idea of the typical form of paranoia can be obtained than by a careful reading of the history of this case as given by the person himself. It is a graphic picture of the steady evolution of the malady—a remarkable self-dissection of the soul's anatomy. Before presenting the extracts from his autobiography, I shall make a few transcripts from his asylum history.

He was thirty years of age at the time of admission; single; a farm-laborer by occupation. He was not a church-member, had a common-school education, and was a native of the United States. Hereditary predisposition was not acknowledged. His mother, who accompanied him to the hospital, stated that he had always been delicate in his physical constitution, and given to despondency. Since the age of twenty he had done little or nothing, because of ill health. A year previous to his commitment to the hospital as a lunatic he shot himself in the forehead in an ineffectual attempt at suicide. Later, he developed delusions that the people of the village were acting upon him by magnetism, spoke disparagingly of him, and were conspirators against his peace. During the whole of his sojourn in the hospital he had hallucinations of hearing, and in the earlier period of his stay had delusions of persecution. Toward the end of his seven years of hospital life he gradually developed, in addition, delusions of grandeur. Although he

[1] "Extracts from the Autobiography of a Paranoiac," edited by Frederick Peterson, "Amer. Jour. of Psychology," January, 1889.

had occasional lapses of self-control, manifested by the breaking of window-glass or the tearing of clothing, he was for the greater portion of the time sufficiently self-possessed to restrain whatever violent or destructive inclinations he may have had, and was permitted to go out alone upon the large grounds of the asylum whenever he wished, and to wander about the woods at will.

It was during the last two years of his stay at the asylum, while still the victim of constant auditory hallucinations, and of mingled delusions of persecution, unseen agency, and grandeur, that he wrote the volume of four hundred manuscript pages with the extraordinary title of "The Piling of Tophet," this title being founded upon Isaiah xxx, 33. The book itself is a deeper history of his life and mental evolution than any but himself could furnish. It is remarkable for its excellent literary style and for its keen reasoning and psychological analysis of his own disordered mind. In it he dissects his hallucinations and delusions like a skilled anatomist. It is as fascinating as a novel. Every page has its value as an index of the condition of his mind from childhood to the last years of his confinement in the asylum; and the story is told with a directness and simplicity that marks truth upon every statement and lends it such charm as pertains to all works which portray life with the utmost fidelity. In his preface and introduction he makes a diagnosis of his own disease.

Our author, as has already been stated, was not a church-member, and in his book he describes his early religious life and his subsequent beliefs as they developed. His father was a Universalist and his mother a non-professor of religion, although she did attend the Methodist church. During his boyhood he attended the Sunday-school regularly, and at one time the Episcopal church; but his attendance upon divine service ceased in early youth. Both parents were honest, conscientious, and highly respected in the community. They were first cousins. The mother was healthy in mind and body, but the father is reported to have been exceedingly eccentric, possibly insane. From what I subsequently learned regarding him, he also was something of a paranoiac. They strove to bring up their children carefully and to educate them as well as possible.

His father died when the patient was twelve years of age. Up to the age of thirteen he attended a country school both winter and summer, but after that his farm-work permitted him only winter schooling. Still, he evidently had unusual talents and aptitudes, and we find him later studying by himself, in the original, many of the classic Latin authors; and among his favorite companions were the works of Boethius, Lucretius, Josephus, and the Bible. His literary style and modes of thought are in themselves an evidence of more than ordinary attainments in rhetoric, philosophy, and logic.

The matter of heredity in his case was not sifted thoroughly upon his admission to the asylum, nor have I since been able to gather much material relative to this factor in his evolution. But one important element of this nature is described in his book—an element not only hereditary in its character, but for a long time part of his environment,

and undoubtedly an influence modifying his mental condition both before and after his birth. I allude to a great-uncle, a brother of his grandmother on his mother's side, who was himself a paranoiac, and who lived upon the farm in intimate companionship with our patient until the latter was twenty-three years old.

As we read on we see, from the author's account of himself, how heredity and environment gradually molded his physical and mental characters. A shy, timid, delicate child; clever intellectually; given to oddities of speech and conduct; inclined to solitary musing, rarely sharing the sports or games of other boys—in him were slowly evolved marked eccentricity of demeanor, a disposition to shun his fellows, a misinterpretation of their looks and actions as regarded himself, a morbid egotism, a consciousness of a gulf between himself and ordinary men, with deep depression, outbursts of passion, an inclination to homicide restrained but feebly by his weakened will, and delusions of persecution. No doubt the derogatory remarks he fancied expressed about him in the stores were the first harbingers of auditory hallucinations. Later, he had murder in his thoughts, through the morbid humiliation he felt at the imaginary insults from others. No doubt, as his conduct grew more and more strange, he did attract attention among his fellow-men, and this, unfortunately, would but feed the flame of his pathological self-consciousness.

We follow his history from infancy through childhood and youth to manhood, and observe how, slowly but surely, the hereditary seed sown in degenerative soil took root and flourished. His peculiar auditory acuteness, with his morbid shyness, soon gave rise to illusions of hearing, and these again were transformed into hallucinations, as is evident if the thread of the narrative is carefully followed. The curious foundation of his hallucinations he well illustrates and understands. An idea arises in his own mind of what people would say in discussing him, and immediately consciousness in the auditory area projects the idea in spoken words into the environment. He noted this peculiarity of his own thoughts being repeated to him by the voices about him, yet he could not correct the delusions to which they gave origin, but interpreted the matter with the reason and judgment of an insane mind. He naturally had the delusion, founded upon his hallucinations, that people were persecuting him, but upon this now grew another delusion. He began to believe that they could read and repeat his thoughts; that there was some magnetic means by which his tormentors could draw off his thoughts; that other wills could act upon his body, dominating his own will and causing him to do things he had no desire or intention of doing.

It was about this time that he was removed to the asylum. Several chapters of his book are devoted to a description of his life there, his religious beliefs, illusions, and hallucinations. A short time previous to his departure for the asylum he began to read much in the Bible, and, as he says, noted passages which seemed to have a special bearing as regarded himself. There were several coincidences of this kind, and he looked upon them at first as merely coincidences, but in time the

resemblance became so strongly marked, to his disordered intelligence, that he came to look upon whole chapters of the Bible as referring to himself. From this the step was not a great one to the delusion of being a prophet. In reading we find that our author had several incentives for writing this book. It contains the autobiography of a new prophet, as well as the revelation of a new religion. From his standpoint, as a man in whose destiny are wrapped up the destinies of the world, he tells posterity of the tortures and trials he has passed through as an atonement for the sins of the earth; how he was mocked and scoffed at, his brain acted upon by magnetic agency, and himself imprisoned in a lunatic asylum for years. Hence the title of his book, "The Piling of Tophet." But behind this insane egotism there shines at times some faint glimmer of the truth, so that he frequently speaks of himself in the terms used by his fellows, as insane, a lunatic, a monomaniac, as having hallucinations; and he thinks the opinions of his friends, relatives, and physicians of sufficient worth to merit considerable argument in his book. He knows what insanity is; he recognizes it in his asylum associates. He could at times "see the man he ought to have become rising up like a shadowy phantom in judgment on the wreck he really was." But this occasional consciousness of their disordered mental condition is by no means infrequent in the insane.

Shortly after writing his autobiography he was removed to a county asylum, where he remained, without change in his mental condition, for several years, when his friends took him out to live with them. He died a religious paranoiac in 1886. He did not become completely imbecile, as such cases often do; nor did he write any further articles, so far as I am aware. Doubtless the indifference with which the world received the propagandism of the new prophet caused his philosophical withdrawal from active warfare in the fields of reform and theology.

In the preface he defines the scope of the book as follows:

"This work is given to the public as a lunatic's defense of his position. Every effort I have made hitherto to come to an understanding with my fellow-men, on things which I see to proceed from them, and which give my life its whole shape, has drawn out nothing more than blank denials of all knowledge of the things I spoke of. Now, it is impossible for me to reduce my thoughts to the bounds which others have been willing to concede. The object of this little autobiography is to show the form and consistency of the thought that is in my mind.

"I present my evidence to the tribunals of last resort, the public and the press, and ask them to try the case and render their verdict. Have I a right to my thought, or have I not? If not, where am I deceived? If I have, why is not mine the true thought for all men?"

A paragraph from the introduction further reveals the object of his confessions:

"A person is supposed to have a reason for what he does, and I might consider it incumbent upon me to tell the motives which actuate me in thus entering upon the work of the scribe under circumstances so peculiar. Is there anything I have to tell that might not as well and

more safely be left untold? It is a question which I do not have to consider and decide to-day, for I have been long inspired with the conviction, the consciousness, that I have something to tell that it would be worth the world's while to hear."

In another introductory paragraph he makes an excellent diagnosis of his mental infirmity. Addressing his reader, he says:

"I did not tell you that I am a patient in an asylum. I am to take it for granted at the outset that my prospective reader knows nothing of my character, condition, or circumstances beyond what I tell him. I am here as an insane patient. I have been here over five years. . . . Being an insane man, it will be nothing unexpected that I should, in giving these reports of my fortunes, narrate incidents and particulars partaking more or less of the marvelous or preternatural. I am not only a lunatic, but one of the class of lunatics having a controversy with the world in general; in other words, possessed with a monomania, or crazy one-sidedly or on a single subject."

In the hospital record presented above, nothing is adduced as to heredity in this case, and but little stated concerning his mental condition in early youth. These deficiencies are, to a great extent, supplied in the autobiography. I shall permit our author first to describe his appearance in this world, in a cyanotic condition, and the characteristics of his childhood and early youth, and subsequently the hereditary influence in his destiny:

"It is said that I was entirely black when I was ushered into the world, and that for I forget how long a period of time I did nothing but give vent to heart-saddening wails. Was I lamenting the gift of light, on this morning of what was to become a woe-burdened existence?

"I was a weakly infant. I came near dying of the whooping-cough, and it was always asserted, by those who knew, that I owed my life to the untiring exertions of a poor woman who lived a neighbor, who busied herself all night with me, dipping me at intervals into a tub of warm water. My half-sister had it at the same time and died.

"It will be of use to give an idea of my nature and disposition in my tender years. I was always a shy, retiring child; not disposed to make free with strangers; not much given to prattle—in fact, one of the sad and silent sort from the first. I can remember some peculiar sensations which used to weigh on my mind, which go to show that the foundation of my mind-life was but imperfect from the first. I used to be troubled with very strange feelings when I was waking out of sleep, especially if I had been taking a nap in the day-time. It used to seem to me that I was floating in the air, and I often thought to myself: 'Why, how queer I have been feeling!' It was as if I filled the whole room, way up to the ceiling. I was told by others that I sometimes raised myself up in bed after getting to sleep and made an outcry, 'Oh, don't! Oh, don't!' seeming to be in great distress; but the strange part of it is that I could remember nothing about it. I do not think that I ever remembered even their waking me, or finding them at my bedside. I only had their word for it next day.

"As far as I can go back, I remember having at times, but not fre-

quently, impressions which must be identical with what I have lately heard others speak of as 'double memory.' The feeling would all at once creep over me that the very thing I was present with, my ideas and perceptions at that time, had happened to me once before in just the same sequence and arrangement. I have heard this explained as due to a lack of simultaneity in the action of the two lobes of the brain, the tardy one remembering what had already passed through the other. My own theory was different, leaving the organ acting out of consideration. I only went so far as to look at it as a mistaken quality in the perception—an erroneous attaching of the nature of the act of remembering to what was really the act of thinking in the present.

"I was very early in life an observer of my own mental peculiarities, to a degree which I think must be a very rare exception. I often used to be sensible of an unsatisfactoriness in my consciousness of what surrounded me. I used to ask myself, 'Why is it that while I see and hear and feel everything perfectly, it nevertheless does not seem real to me? It is as if I were in danger of forgetting myself and the place where I am!' I often wondered even how I kept the run of things as well as I did. I always found myself holding on to the orderly and proper connection of my acts, and yet from my feelings I could not have answered for my doing so. I can remember sitting at my desk in school, when a small boy, and dwelling with melancholy on this dimness in my perception of existence, and wondering how it was with others in this respect. I wondered to myself if life, as ordinarily bestowed, included this deficiency.

"I showed in my tastes and behavior a harmony with the internal composition of my mind. I was never given to the active sports which the common run of boys take so much delight in.

"The simple fact is that I had a languid nervous development, and from the necessity of my organization could not have much capacity or relish for sports of agility.

"If I could compound a boy of my own I should try to improve on the model I remember to have exhibited in myself.

"It is not true that I was regarded or treated as strange or deficient in my wits. Such an idea would look misplaced to those who knew me and consorted with me in those days. These differences are perhaps more evident to myself than they ever were to the greater part of my acquaintances. I brooded on this side of my character at a later period, and I no doubt remain liable to give greater prominence to disparaging traits than some impartial observers would justify me in doing.

"As a general rule, my harmless and peaceable disposition kept me out of squabbles with my schoolmates. If I was approached in an aggressive way, I met it with absolute non-resistance, which in my case had the disarming effect which is attributed to it by pious moralists.

"If we change the scene from the playground to the schoolroom, we shall find that I attained a distinction of my own, apart from the average, and more to my advantage there. I was always a favorite with my teachers. I never gave them any trouble, and took to my studies with a willing relish that could not but be pleasing to them. I learned to read before I went to school; in fact, like an old asylum acquaintance, Mr. M., inventor and infidel monomaniac, I can almost say that I can't remember when I could not read.

"I was frequently singled out for complimentary remarks on my

proficiency in my studies. I gave evidence of some talents of a higher kind—could draw, for instance, better than any boy in the school.

"One of the most marked weaknesses of my character, as a child, was my susceptibility to being teased.

"After having pondered some on the traits of the human animal in this particular, I have come to the conclusion that there is no further explanation needed than that the impression made on the teaser by the teasable is such as to naturally prompt the acts constituting the teasing, as the sense of burning makes us shrink, and an aroma suggestive of a fine flavor tempts us to bite. I feel convinced that the liability to be teased rests on a principle that has a mighty influence in the motions of the soul of humanity.

"My misdeeds, as a child, were rarely prompted by a love of mischief or the result of headlong thoughtlessness.

"I had a well-defined idea of the nature of sin, and I used frequently at night to recall the events of the day, and reflect on instances in which I had transgressed and given way to ill-humor, and form resolutions to try and do better. From some of the most flagrant of the sins and improprieties to which small and larger boys are prone I was entirely free.

"My early training can not be said to have been a predominantly religious one. My mind was neither imbued with ineradicable prejudices nor prepared for reaction to the other extreme by excessively rigid sectarian drilling and formalism.

"I worked steadily upon the farm, though with moderation, at such kinds of work as I seemed to be equal to. The heavier kinds of work, such as plowing and wagoning, as also the marketing of the produce, were attended to by my great-uncle.

"It is a somewhat delicate subject to manage to my satisfaction this that I am about to enter upon, but it demands candid and impartial treatment, because the events that followed in later years can not be rightly understood without it. It is impossible for me to give a veracious sketch of my soul-life during this period without dwelling quite minutely on the characteristics of my great-uncle. He was a man who had roughed it a good deal in the world, had been at one time in his life a live-oaker in Florida. How his temper and disposition may have been at an earlier period I can not say—I only remember him as a man possessed of the belief that a certain young man living on an adjoining farm had the power to torture him at his pleasure, both by bothering his brains and inflicting physical pain; which power he made use of to such good effect that the poor victim was almost constantly kept busy holding him at bay by means of cursings of the most fierce and vigorous description. While at work with the horses in the fields, and when driving, he would intermix his commands to the animals with savage execrations of the troubler of his peace. The unfortunate man was troubled, at certain seasons of the year especially, with sore feet, and at such times his imprecations against the offender would fairly rise to yells, and were almost blood-curdling in their intense ferocity. Thus it went on day and night. He slept in a small room in one of the outbuildings, and often he could be heard at a great distance off shouting out threats, sometimes throwing boots or boot-jacks against the boarded side of the building where he lodged to put in the interjection points.

"It may be imagined that a boy of a reserved and sensitive disposition, as I was, could not assimilate very well with such a character as this. I was always distant in my intercourse with him, and a feeling of aversion for his habits of savagery led me to avoid coming in contact with him more than was rendered necessary by our joint labors on the farm.

"As the years passed on and I continued to live in the presence of my uncle's fierce demonstrations of hostility against the invisible destroyer of his comfort, my tolerance for his conduct insensibly gave way. I had now reached the age of eighteen or nineteen; was a tall, slender youth, not strong either in nerve or muscle.

"The exhibition of his ruling passion called up more and more determined feelings of antagonism in my breast.

"Before I knew it I had gone a criminal length in my resentful feeling. I came at last to feel that a person of such a thoroughly savage character did not deserve more indulgence than a mad dog. My position from that time was one of contingent murder. Alas! that I should have been content to let such a state of things last a single day. The frightful danger of my situation ought to have been sufficient to spur me to sacrifice everything to escape from it. But I was in chains, the chains of apathy, impotence, and incapacity, and I could only stay where I was and fume against the object of my detestation.

"I must always regard it as one of the most unfortunate things in my unfortunate career that I should have been placed in contact with this much to be commiserated sufferer at such a time of life. It was not the man himself that I hated. When my judgment could act without impediment, I saw that his unpleasant behavior was entirely the phenomena presented by his never-ending war against what was, in his eyes, the most wicked and cruel of persecutions. I could then pity him and dismiss all rancorous thoughts."

This antipathy led to a change in the residence of our author. He felt that he must be separated from his uncle, and, accordingly, he removed to a town at some distance from the farm. It is curious that he never speaks of his uncle as insane, and it is probable that both his mother and himself and other relatives regarded his persecutory delusions as merely evidence of eccentricity. Soon after removing to town he had some pulmonary difficulty, and he speaks at some length of this as follows:

"In the depressed state of my nerves I imagined myself much worse than I really was, and, like many others in the same condition, I felt as if I was liable to sink away and die at any time. My disease was accompanied with periodical accesses of fever, and in the fictitious strength of excitement given by this my mind seemed to gain an abnormal activity. It was at this time that I first received a revelation on the mysteries of the human soul that had an all-dominant effect on my destinies and the turn of my thoughts ever after. . . . I now learned what had always been to me a hidden mystery—what was the meaning of strength of will and strength of intellect. Before, I had ever lived enshrouded in mists and clouds. In that transitory strength given by the fever coursing through my veins, I now saw the man I ought to have become rising up like a shadowy phantom in judgment on the

wreck which I really was . . . My agitation was so great that my mother and the neighbors seemed to fear that I was going crazy. *I* felt that I *had* been crazy for a long while and had just recovered reason. It was a fact. But I was constrained to lock up my remorseful agony in my own breast."

We have seen that our patient was throughout his early youth morbidly subjective, and his hypochondriasis increased with years. He had now attained the age of twenty-three; we shall let him describe his mental condition and habits of life at this time. In this description we shall see the gradual growth of persecutory ideas upon a favorable soil:

"My strength and endurance were not sufficient for manual labor, and I did not feel confidence enough in the clearness and energy of my mind to justify me in making application for any post where head-work would have been demanded, or for which ready presence of mind or a good address would have been required. But it was the unpleasantness felt on contact with my fellow-men that operated more strongly than anything else in binding me down to the course of life to which I devoted myself. I felt my deficiencies most keenly every time I met a human being face to face. . . . . I could not do otherwise than shun what was so galling to my sensibility, while appearing to conduce to no desirable end. . . . . But I am going to show that I still remained exposed to very great dangers, and it is as true as it was before that I shunned the only means of averting the calamities threatening me, no doubt of necessity at this stage, and in obedience to the eternal decree that every tree shall spread out and develop in accordance with the qualities given to it 'before it was in the ground.' I did not like the constraint imposed upon me by the presence of man. I did like the freedom of solitude. I strongly disliked many things I noticed in the manner and words of some I met, and there was nothing to prevent this dislike from occasionally being absorbed into my solitary musings, to find its final resolution in the passion of indignation in its various degrees of intensity as the case might be. I have spoken before of my defective means of defense against 'teasing' or mocking for the purpose of troubling. I was always terribly alert and sensitive to all kinds of 'snubs' and sneers, and oblique remarks in general, on their proficiency in which some people pride themselves so much. . . . . I was also disagreeably impressed by the ways of some who showed a disposition to turn their attention to myself, instead of confining themselves to the subject I was presenting to them.

"I was being carried into a state of secret enmity to mankind in general by the prevailing tenor of my brooding meditations, and there was no corrective present.

"But all received a hue from a yearning for what was worthy in life, paired with a mournful sense of its hopeless absence. Whatever wrong turns I may in my weakness have been betrayed into, it is impossible that I should look upon my then existing frame of mind as a whole with repentant feelings. As well condemn righteousness and holiness itself!

"When I admit that I occasionally was overcome with an irruption of hard feelings toward wrong-doing man, it will, of course, not be understood that I was habitually morose and spiteful in temper.

Nothing could be further from the truth. What commotion there was was mostly internal, rarely reaching the surface in visible ebullitions. . . . . I occupied myself with the trifling labors of my garden, dwelling with interest and pleasure on the progress of my crops and flowers, and every now and then took a ramble over to the woods lying to the south, which were a favorite place of resort to me all the while I lived there. There I botanized and moralized, explored the recesses of the woods, enjoyed the calm quiet of nature, and groaned over my hapless condition, wondering what it was to come to.

"There were some little things that happened to me the first year after I left the farm which became, as it were, a kind of sample of what I must continue to expect, and the memory of which had more influence over my action in after time than I was aware of myself, no doubt. . . . . When I was around the city, thinking I might get employment I called on one of my old acquaintances, who was then in a store. I talked with him a few minutes at that time. I called again a short time after, when I was told by the proprietor that the gentleman I had called to see was not in. There were a number of men present in the store,—salesmen,—and it became apparent to me that they were trying to exhibit an offensive demeanor toward me, or perhaps it would be as true to say that they were moved to make a derisive demonstration against me. At all events, all, with perhaps the exception of the proprietor, stood with contortions of countenance, which was perhaps laughter, until I retired. . . . . I found it hard to consign this to forgetfulness. At first it lay dormant, but it would come up, and I must confess I had hard feelings, even revengeful feelings, toward the actors. Another thing happened the same fall. I went to a store, and, standing at the counter, was noticed by one of the clerks,—an Irishman,—who came to me and said, 'I always wait on the little boys first,' and, as I took no notice of the remark, seemed so determined his words should not be lost on me that he repeated them, with the addition, 'like you.' As before, it produced no immediate effect, but it afterward rose and rankled in my memory, and I was not able to keep clear of imagining vindictive things. In fact, to tell the truth, in both cases I felt that blood would have been sweet to me. . . . . My mode of thinking on these incidents no doubt had in it much of the character of insanity. . . . . The effect was that I got settled down into the fixed idea that contact with the thoughtless, evil world, in my state of body and mind, would impose upon me the necessity of committing crime in vindication of my honor. . . . . I let these bloody memories tinge my whole mind, and all its anticipations and resolutions for the future. . . . . 'I see,' I said to myself, in substance, 'that these galling collisions are the natural penalties of being imperfect.'

"It may be as well, for the prevention of misconceptions, to say that I never took one step toward putting any design thence arising into execution. I had no designs. I never armed myself, or, in fact, went any further than to rehearse the drama of revenge in my own mind. The pistol I bought was one which I would not have trusted for a moment to carry for the purpose of self-defense. . . . . Nevertheless, the events on the farm show that my wickedness was not altogether of a mimic kind, and I will not attempt to escape righteous judgment.

"I used to make many resolutions about regularity in habits of eating, which I found myself powerless to keep. A sense of depression and vacuity would come over me, aggravated by my solitary, monotonous life, I presume, and often by an obstructed state of the alimentary organs. . . . . It is a common feature in insanity or semi-insanity left to itself, I think. I also exerted my brain to the extent of abuse, I know, in the way of study. . . . I used to study Latin for a pastime, and often kept cudgeling my brains over Cicero and Cæsar until the top of my head was very sore. This solitary immersing of an enfeebled mind in study, with obliviousness to myself and all surroundings, was, no doubt, a help toward the grand consummation that took place in the fullness of things. . . . . I suffered a good deal from bodily ailments. My liver seemed to be thoroughly out of order and torpid. I had a feeling of hardness and inflammation in my sides regularly, a certain length of time after meals; digestion was bad, appetite irregular—in fact, every sign of a deadlock in the vital functions."

His mother and he removed to another village in 1871, when he was twenty-eight years of age, by which time there was but little question of his insanity, even among his relatives. I let him take the thread of the story again at this epoch:

"When my mother was making preparations for moving she asked me to help in packing up some chairs. I made an effort to apply myself to the task, but suddenly found myself overcome by my feelings, and before I knew what I was about I had shivered one of the chairs to fragments. A most unpromising omen! The fact is that I was, and had been for some time, in a state which any physician, knowing the facts, would have pronounced to be unmistakable insanity. But I had different ideas about what constituted insanity, and often thought to myself that if I did get put into an asylum, as had been threatened, they would not keep me, because they would see that I was perfectly rational. I have learned more about the subject since.

"Things of the kind I have told of had happened to me before, at uncertain intervals, during several years, an obstructed state of the bowels bringing on a turn. I would get into such a condition of exaggerated discomfort as to lose for a moment, or sometimes quite a spell, my control over my actions, and act very strangely. Sometimes I dashed down an article I happened to have in my hands, or demolished the first thing that came to hand; sometimes I gave vent to my feelings by grating my teeth, 'clawing' my face, and going through strange grimaces and agonizing contortions. My face seemed to me to be paralyzed when I had such turns, as if lifeless. The worst thing I ever did was when I flew at my mother in a sudden access of frenzy one day, when she had wrought upon my feelings by talking to me irritatingly, and bit out a mouthful of her hair. . . . When I was committed to the asylum, at a later day, it was reported as one of my symptoms that I had delusions about my mother being my enemy, etc., but nothing could be further from the truth. . . . I often grieved in secret over my inability to be a stay and protection to her, bereft as she was of all other support, but all in vain.

"In my new home I was in one of a row of houses, with strangers

living near on both sides, and the sense of the presence of the evil which I had shrunk from so long weighed down upon me with crushing weight. After a while my spell of hypochondriacal despondency passed off, and I settled down into the way of living which I adhered to as long as I remained there. As to getting acquainted with my neighbors, or having any intercourse or dealings with them, that was altogether out of the question. . . . I now had more of the feeling of constraint, from the knowledge that I was moving under the eyes of people who were strangers to me, than the strangest of the strange could be to a person of the ordinary stamp. Sometimes I heard remarks which did not affect my feelings flatteringly, but that was not common.

"Along in June I had a worse spell than common of the kind of nervous stagnation or will-impotence of which I have spoken, and perpetrated some quite irregular acts before my fetters became slackened. In my despair I tore the collar from my shirt, tore the slippers I was wearing, dashed my fist into a tempting dish which my mother was offering me to eat, and other things of the kind. The house we occupied was owned by a maiden lady who lived with her sister in part of the house. . . . In the evening, after the other sister returned, who had been absent during the day, I overheard a few words which showed plainly enough that the events of the day were being discussed in no very gratified humor. It was evident that my acts were severely reprobated."

The next day the justice of the peace called upon him and admonished him to restrain himself, hinting of the asylum. Of this our author says:

"The dragon's tooth of reprimand that had been left in my mind grew into a monster, in whose presence I found it impossible to live, and I had a fresh access of despair. It was a hot June morning. I remember seizing a razor and flourishing it, and saying, 'Show me that rascal and I will slaughter him,' or words to that effect, meaning, of course, the justice of the peace."

Both homicidal and suicidal inclinations had long been haunting the secret corners of his mind, for three years before he tells of buying a pistol for the express purpose of making way with himself or some one else. On this day, after meeting the officer, he determined upon suicide. He walked out to two different country stores and bought ammunition. On his way back he passed some men in a field. They all looked at him, and one of them "laughed loud and mockingly, and then cried out, in a sort of squealing way, the intention of which could not be mistaken." Then he played a game of croquet with a young man at his uncle's, and overheard the young man make a covert and derisive remark. He continues:

"I passed the next day in brooding, silent melancholy. It was a rainy day and in accord with my feelings. . . . That night I wrote a little statement to be left behind. . . . It can not be said that I plunged thoughtlessly into the gulf of self-murder. I had from the first gaged the responsibility I was taking on myself, as fully as

my mind was capable of doing it. I felt the whole weight of the condemnation that rested upon me for committing such a deed. . . . I passed some part of the hours of the night in sleep. In the morning my mother came to the door to see how I was, and I grasped her hand with a gesture of agonized despair. She took it as an indication that I was going to have one of my wild spells again, and, as she told me afterward, began to anticipate some work of demolition after I should come down-stairs. After she had gone down, I went and took the pistol from the stand-drawer, put on a fresh cap, got into bed again and propped up my head on the pillows, placed the muzzle of the pistol against the center of my forehead, and fired."

He lost considerable blood from the scalp-wound, but the bullet had glanced off; and, although he now tried to starve himself, he was up and about in a few days as usual, attending to his garden with bandaged forehead. He continues:

"There were some steps taken toward getting me into an asylum after my abortive attempt at suicide, but as there were difficulties about it, and I appeared perfectly sensible and rational, my relatives concluded to let it rest.

"From the time of my shooting until the next spring there was not much that deserves mention. How were my thoughts about suicide? It must be said that I had not totally renounced that idea. . . . I used very often to scan the beams in the wood-house and the coils of clothes-line in the garret. . . . The old difficulty of giving way under the slighting or displeasing demonstrations from others remained as bad as ever. I remember once I was so wrought upon by some trifling thing said or done by one of my relations that I kicked out the bottom of a cane-seat chair I was resting my feet on, in a sudden paroxysm of impotent emotion."

About this time he also made a futile attempt to poison himself by drinking a bottle of strong tincture of valerian that he had made himself. That incident he describes, and then proceeds:

"It was my intention, when I began this sketch of my life, to give greatest prominence to that part beginning with my troubles in Clinton Street—that is to say, the period of confirmed lunacy with hallucinations, according to the world's avowed decision; but it appears at present that my project is not to go into fulfilment. I have been greatly delayed in doing as much as I have by lack of strength.

"To make the account which I have given as full an exhibition of my condition at the time my hallucinations, if such, appeared, I will note some further defects in my mental action which I had noticed up to this time. First, two or three things indicating original lack of control over the brain by the will, or non-identification of my will with the action of my brain, and which I must count for predisposition. I have been troubled from my boyhood with a tendency of my brain to see things it ought not to see in what is placed before my eyes. This refractoriness does not extend to all kinds of monstrous visions, but is limited to the singling out of the lineaments of the human face in the outlines of objects seen. The annoyance I have experienced from this

has varied greatly, according to the state of my health. When I used to be sick with the fever and ague, I would lie in bed and gaze at the coarsely daubed window-shades in my bedroom, until I had made out every possible kind of a profile that could be distinguished.

"The other of the two most serious abnormal peculiarities is the supplying of missing articulations to vocal sounds, heard but not understood distinctly, so as to give my mind the impression of certain words, at the same time that I knew I had not understood. Sometimes I have been really cheated this way, and only found it out by inquiring afterward. This might not give conclusive proof of the deception, it is true. Not to violate privacies, I will illustrate supposititiously. If it were proclaimed aloud, far enough from me to allow the inflections but not the articulations to reach my ear with certainty—

WE SEE WHERE LIES THE DREADFUL SECRET!

my mind might involuntarily and instantaneously reshape it in such a way that I would understand:

DECEIVE WHERE LIES WERE EVER SACRED!

"My attention was always quite easily disturbed by noises, particularly talking. In boyhood the sound of voices in conversation at a little distance after I had retired to rest often gave me very serious annoyance, showing excessive irritability of the brain.

"Such was my mental state on the eve of my being overtaken by a more marvelously awful fate than ever fell to the lot of mortal man.

"My original purpose was to follow the incidents having a bearing on my mental fortunes with tolerable minuteness, in an unbroken chain, up to the time of reaching that wonderful state in which I have existed for the last six and one-half years.

"I shall be obliged to confine myself more to generalities.

"I was in such a towering state of morbid sensitiveness that a slight tinge of impertinence, brusqueness, or fancied contemptuousness in the manner of those I met, put me on the rack at once. . . . It began to occur to me after a little that my ears were becoming wonderfully acute for such things. Very often I would hear lively discussions on my character, and disputes about the proper epithets and titles to be applied to me, which I understood perfectly at an astonishing distance off. . . . I was wrought up to such a pitch that I formed a resolve that if I were given a sufficiently open provocation, I would attempt a bloody revenge, and on one occasion went out with a razor in my pocket. . . . I had an oppressive feeling of impotence, as if paralyzed, and suddenly did things I had no intention of doing, as in breaking glass. . . . I had a soreness all through my limbs which I compared to molten fire running through my nerves.

"I began to hear responses to and comments on my performances, and it gradually dawned upon me that I had been making myself a conspicuous object of curiosity to the whole neighborhood. . . . The comments heard grew more numerous and more and more derisive. . . . I had no suspicion at the time of any of the inspiration being drawn directly from my head. I do not say it was so. This is the debatable ground. . . . It was not until about a week later that it became evident

to me that I was hearing my own thoughts given expression to by foreign wills and voices.

"I heard a great deal about 'inducting,' 'conducting,' 'sphere of influence,' sometimes even 'poles,' positive and negative, and my brain was constantly compared to a magnet. . . . I could find no better explanation myself for a long time than the theory of a fluid, similar to or the same as electricity, uniting brains.

"One was the story of an English physician who had become acquainted with my magnetic properties, and who was on the spot at the beginning, directing the experiment. He was stated to have been the first to form a perfect communication with the inducted brain, and he had drawn off my entire memory back to childhood, and had delivered it verbally in the presence of reporters from the city, who had taken it down. It was stated that the record was preserved in a number of thick volumes. These he had taken with him when he sailed for England during the most prosperous part of the experiment. It was further asserted that he continued in communication with my thoughts, and that wherever he went every one to whom he told the story of the new marvel was also set in connection with the magnetic current flowing from my head, and began to participate in my thoughts. . . . One word more of the English doctor. He is said to have declared that if he had assisted at my birth he would not have suffered me to remain alive, as the monstrous character of my organization could have been seen at a glance. . . . After the whole earth had become pervaded with the magnetism from my head, it would be felt as long as I lived, and the instant of my death would be thus signaled all over the globe, and would be noted and used by all nations as a new era from which to reckon time.

"I would think of the Bible, go and open it at haphazard, and just where my eye fell there was a passage that showed me *myself*. Once when I had been fretting about my ill success in getting my mother to accord with my views about my neighbors' doings, I hit upon this:

" 'And it shall come to pass that when any shall yet prophesy, then his father and his mother that begat him shall say unto him, Thou shalt not live, for thou speakest lies in the name of the Lord; and his father and his mother that begat him shall thrust him through when he prophesieth', etc.—Zechariah, xiii.

"But the most perfect identity of all is to be found scattered through the Psalms" [of which he quotes several pages, and then continues]: "I do not intend to appropriate the spirit of these passages, or to make their language my own, but quote them thus collectively as an evidence of fact. I am myself but an inquirer. Do they express the experience of any certain person or persons? Or are they prophetic? . . . Can it be that the same thing that has happened to me has befallen another in ages long past, and that these are the traces of it?

"I have also found a most remarkably close application of many of the precepts and reflections of Thomas à Kempis in his 'Imitation of Christ.' He seems to keep the same character exhibited in the Psalms in view, only speaking as a monitor, instead of in his person. I presume I find myself mirrored in both these places, because I am an extreme case."

Gradually his delusions, burgeoning one from another, became so

systematized that in the last year of his stay at this asylum he could write in his book :

"The signs are too many and too evident to permit me to doubt that my destiny is bound up with the religion of the world. I steadfastly believe that the words in Jeremiah, 'Take forth the precious from the vile,' are addressed to me; and I can not be recreant to the holiest of duties. . . . I will not waste time in useless discussion, but start with the assumption that it is God's will that I should give the world my opinions.

"If it comes to be generally believed that my sign is a fulfilment of Hebrew prophecy, I would recommend a transfer [of the Sabbath] to the day of the commandment. The very fact of a day one step removed being fixed on by both Christians and Mohammedans looks like an admission that another step remained to be taken.

"Was it not the confidence of Jesus in the book spoken of above that made him say he knew the Father, when contending with believers in personified derangement?"

Quite a large part of the volume is devoted to expounding the Scriptures, in accordance with his delusion that he is a prophet come to reveal a new religion.

For instance, of Babel he says :

"I find an application for the tower of Babel in my own insane history. I expect a confusion of the speech of the old sects to ensue likewise."

Of Abraham he remarks :

"Abraham is accounted the father of all who believe in the Eternal. I believe I am chosen as his sign for the abolition of all dishonoring beliefs, as Abraham was set up against all idolators and pagans. . . . I have to note, in connection with the offering of Isaac by Abraham, that I find the date given as 1872 before Christ, coinciding with the year after Christ in which my ear-troubles commenced."

Of Esau :

"We may take Esau for polytheistic religion, recognizing and deifying every force and passion that has dominion over the soul and destiny of man. . . . When it gave up its birthright for belief in a single judge, it pledged itself to go on and submit to be judged by the new master. I believe that the day of judgment has come."

Of the miracle of the rods :

"The rods changed into serpents signify arguments becoming living convictions in the mind of Pharaoh. The evangelists' rods live as serpents in the minds of Christian believers, but I confidently expect that my rod will become a serpent that will swallow them all without trouble.

"Israel is held responsible for the destruction of the heathen and their idols. I conceive that I am the Lord's instrument for the com-

pletion of this work, and that I have been shown these signs in the law that my hands might be strengthened.

"I can not shut my eyes to the fact that I have been made the world's sin-offering."

Of the prophets :

"The prophets I will take in a lump, with the assurance that no one can fail to see their connection with my destiny. There is a prophecy in Ezekiel, xxxiii, 30, which is very closely paralleled in my experience. . . . Jonah gives me a parable."

His discussions of theological questions are interesting, perfectly coherent and logical, although often fanciful. He pays tribute to the beautiful moral laws and righteousness of Christ, but is disposed to criticize His conduct as being inconsistent in one who claimed to partake of the omnipotence and omniscience of the Eternal. Of resurrection he says :

"If I conceive of a new body having the memory which I have of this body's life,—and I can find no other idea of the continuance of a soul's life except in the perpetuation or renewal of the memory,—would that in the new body be a *true* memory? Would it not be a hallucination? Would not that be an insane creation?"

In speaking of the years of his greatest mental aberration, he says :

"Here I come to more debatable territory, on which I and the rest of the world have until this present been at variance. I will, in deference to the other side, make use of the word *believe* in stating facts drawn from the region of my memory lying within this shadowy world. I will be permitted to say, therefore, that I *believe* that after settling down in the before-mentioned place, my brain was, by the gradual progress of events occurring naturally and according to the ordinary laws of human affairs, drawn into relations to the living actors around me, of an altogether unexampled kind—at all events, different from anything plainly recorded in the annals of past ages. I *believe* that the final result of such relations was the superinducing of a state of mental intercommunication through the medium of my sense of hearing.

"But this is a very old story, and merely a restatement of the perfectly well-known features of my alleged monomania. Let me pass on and give, as well as I am able, my own theory on which I explain these phenomena, which may have more interest. It is a question of personal identification. How does a man use his own brain? He can use it because it recognizes the actions of his members as belonging to the personal unit of which it forms the summit. Now the question is, can not a human brain under certain circumstances become so perverted as to recognize for itself, and without the volition of its bearer, the acts of other individuals as belonging to its life, as falling within its own memory? And if so, would not those individuals become partakers of the intellectuality of that brain, know its conceptions and ideas, while it thus recognized their motions, and become able to share its walks and ways? Such I believe to have been the result in myself, from the towering height of disintegration reached by my mental organism, by

the gradual process which I have endeavored to faintly shadow forth in the preceding five chapters.

"Let us see whether it does not look probable that a mind in the habit of separating recognized observations from its own responsibility, considering them objectively, philosophizing on its own manner of working, driving the impotent and erratically acting part into a corner, as it were, would not be more exposed to such a fate as supposed than one acting unitedly, and right or wrong as a unit. It may not be susceptible of argument based on points of organic action, but it looks a plausible thing to me that the insane quality or element in such a brain might be acted on from without, and give itself up to such action, independent of the thinking will of that mind.

"But let us further suppose some little abnormality about the original constitution, a predisposition from a slightly dislocated arrangement of mind-apparatus and sense-apparatus.

"Such, say I once more, I believe to have been the case with myself, and such to be the true nature and essence of the things which have constituted my insanity. . . . I do not deny the fact of insanity, but I firmly believe that it is and has been, since the summer of 1872, an insanity involving the will, ideas, and acts of more than one individual.

"Notwithstanding my full and necessary faith in the reality of things as I have reasoned to prove them, I am still willing to concede that there has been more or less of purely subjective illusion mingled with these dual realities. Under one aspect the whole of this train of mental images and impressions which has whirled through my head has consisted of insane delusion. The effect on the state of my system has no doubt been analogous to that produced by delusions, and the nervous condition which preceded it was such as eventuates in the rise of delusions. Does not the development of delusions often have a compensating effect in freeing the nervous system in a manner from its trammels? Perhaps when this supervenes the brain becomes a chimney for the combustion of the matters which threatened to entirely interrupt the action of the system by clogging. The patient is then known as sensible on most subjects, but a confirmed monomaniac."

Certain peculiarities in his hallucinations possess considerable interest. They almost always referred to the intercommunication of brains. In July, 1878, he wrote out a list of specimen phrases which he had heard while sitting alone at an asylum window. Some of these I reproduce here:

"One thing you know, you know when you get your will in there you get him into a hell of misery."—"He ain't got any will there to fool away."—"Although you are knowing his ideas you connect with her will."—"Instead of connecting with his ideas you keep giving him to her."—"You can't get your will there till he connects his through to his thought."—"We are all the while trying to make him think himself."—"I think we ought to be making efforts to get the idea out on the hall."—"After they get the whole will he is in a hell of torture all the while."—"We keep hollering till we get him into a hell of horrors."—"You see, when there are two wills connected with the head at the same time, he ain't nowhere."

These were the voices of several men and women. In fact, his hallucinations were always polyphonic, and at times would be polyglot. They did not address him directly, but spoke to one another about him. He seldom had hallucinations of hearing except when the ear actually received the sound of distant conversation or inarticulate noises; so that for their production it was usually necessary that there should be transmission of vibrations to the auditory cortical area. As instances of the polyglot character of the voices on occasion, I relate the following:

Once he heard some one call out, "If he ain't a prophet there never was a prophet—tabulas dedi ut vincerer." In tracing this Latin to its source, he found it was a perversion of a phrase in a note to Whiston's "Josephus": "Egomet tabulas detuli ut vincerer" (I myself carried the letter commanding that I be bound), attributed to Bellerophon, which he had once read.

At another time in a street-car, a German sitting next to him cried out, "Das ist das grösste Mirakel von der ganzen Welt. Jeder Gedanke der ihm in den Kopf gekommen ist hat die ganze Village gehört." (That is the greatest miracle in the world. The whole village has heard every thought that has come into his head.) The grammatical construction of the foreign phrases is open to criticism. The language used by his invisible tormentors was always a peculiar dialect, often abounding in slang, which he considered the most hateful kind of language, and which was such as he never voluntarily used in the composition of his own sentences. The hallucinations were usually boisterously satirical, teasing, quizzical, frequently accompanied by laughter.

Course and Prognosis.—The usual course of paranoia has just been outlined. Many cases, however, enter into a state of secondary dementia toward the last.

The prognosis is absolutely unfavorable. I do not know of a single case that has recovered. These patients may live to an advanced age, especially under the fostering care of an asylum. Remissions are occasionally noted.

Morbid Anatomy.—The disorder is purely functional. No pathological changes have been found in the brains of paranoiacs. In some instances asymmetrical arrangement of the convolutions has been noted. These belong in the category of stigmata of degeneration.

Treatment.—Therapy does little or nothing for the disease once it has become established. Sometimes complete change of environment brings about a remission. Constant physical occupation, hard work out-of-doors, is perhaps the most useful of remedial agents, in that by this means the mind is diverted from the constant contemplation of hallucinations and delusions, and through bodily fatigue is made to receive a considerable amount of repose. Labor acts as a counterirritant. By it episodic outbreaks of excitement may be aborted or reduced in intensity. Prevention naturally would be of vast importance, were one able to anticipate the coming catastrophe in the prodromal period. Children and youths who exhibit such symptoms as have been described as incident to the hypochondriacal epoch of the

evolution of paranoia require a special system of education and training, in which occupation of the muscles and out-of-door life should play the chief rôle.

CHAPTER XIII.

IDIOCY.

Definition.—In attempting to make a good definition and prepare a classification of idiocy, we meet with much the same difficulties as exist in connection with the allied subject of insanity. The innumerable definitions and classifications of insanity by different authorities are familiar to all students of morbid psychology. Each author feels called upon to be original in this particular, or at least to modify and improve upon the dicta of previous writers. This confusion is quite parallel in the matter of idiocy; and it is easy to understand why this should be so, for in both conditions we have deviations from the normal mental state of every possible shade and degree, depending upon a most varied pathology. The etiology is complex, and the psychic and somatic symptomatology multiform. There is no wonder, then, that the clinical picture is hard to draw, and the arrangement into clinical types difficult in the extreme. It is impossible to make any comparison between the psychological state of idiots and that of normal children, for the former is not only one in which the mental faculties are diversely undeveloped or impaired as regards their quantity, but there is infinite variation in the quality of the idiot's psychic functions. Likewise it is impossible to contrast the mental organization of the idiot with the intelligence of the lower animals, for the idiot is always abnormal, while the animal is a normal being in the zoölogical series to which he belongs.

What seems to be desirable in a definition is that there should be expressed in it the condition of mental weakness existing, the facts that the condition may be congenital or acquired, and may be due to a defect or some disease of the brain, and, further, that the condition is one belonging to the developmental period of life. A definition something like the following would seem to me to fairly express these desirable points:

Idiocy is mental feebleness due to disease or defect of the brain, congenital or acquired during its development.

Classification.—As regards classifications, they have been made upon a basis of symptomatology, psychology, etiology, craniology, teratology, and, to a certain extent, of pathology. But it seems to the writer that the time is not yet come for an accurately scientific classification of the forms of idiocy. It is much the best plan at present to adopt an artificial grouping, chiefly clinical, but pathological to the

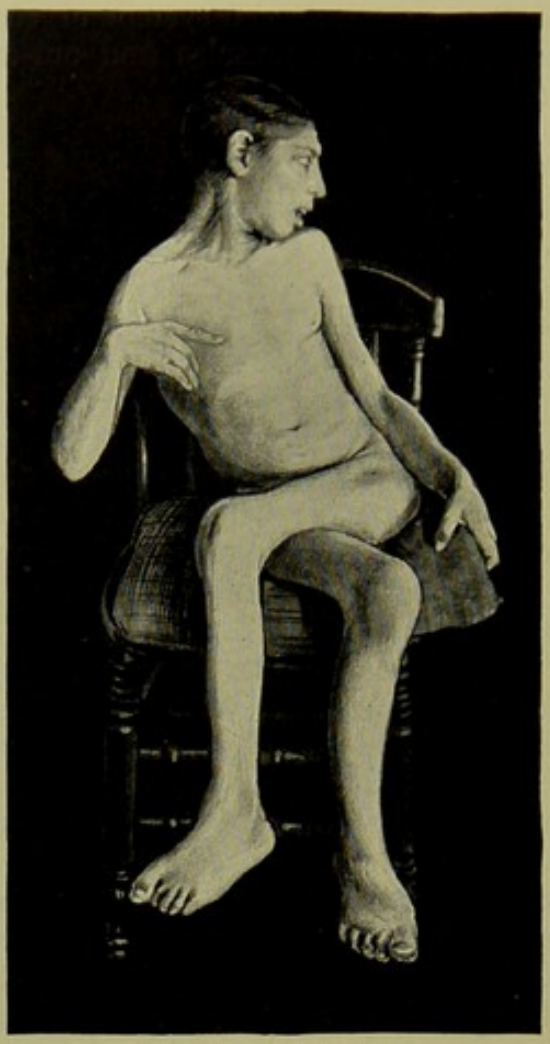


Fig. 282.—Diplegic idiot.

Fig. 283.—Extreme hydrocephalic idiocy, with diplegia.

Fig. 284.—Cretin aged thirteen years standing beside normal brother aged four years (showing dwarfing of growth).

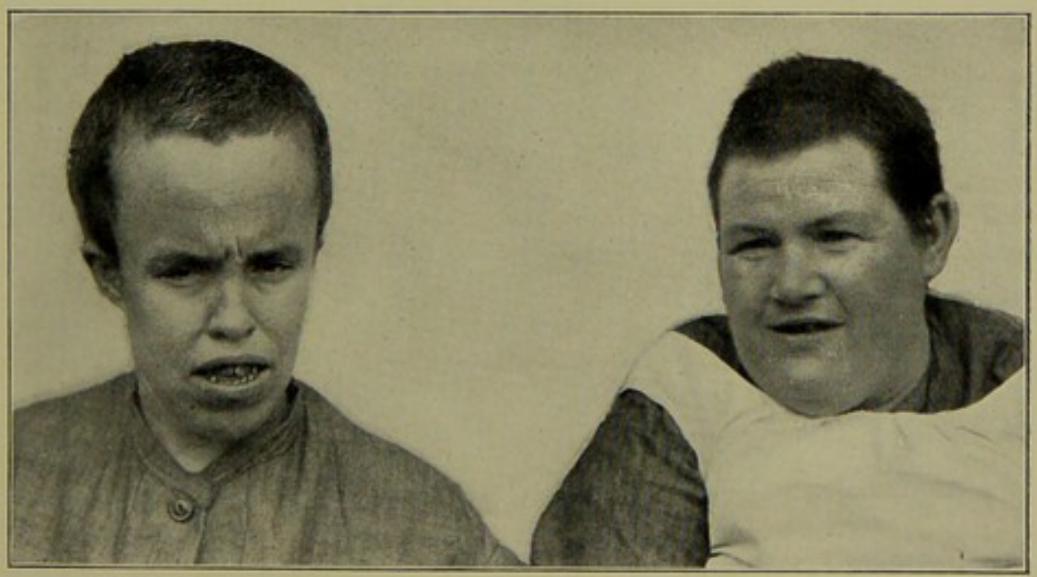


Fig. 285.—Hydrocephalic imbecile.

Fig. 286.—Idiot with multiple sclerosis.

Fig. 287.—Microcephalic idiocy—wild, restless, quarrelsome, perverted.

Fig. 288.—Hydrocephalic feeble-mindedness.

Fig. 289.—Microcephalic idiocy.

Fig. 290.—Paraplegic idiocy.

Fig. 291.—Microcephalic imbecile—good-natured and a fair worker.

Fig. 292.—Good-natured imbecile—fair worker.

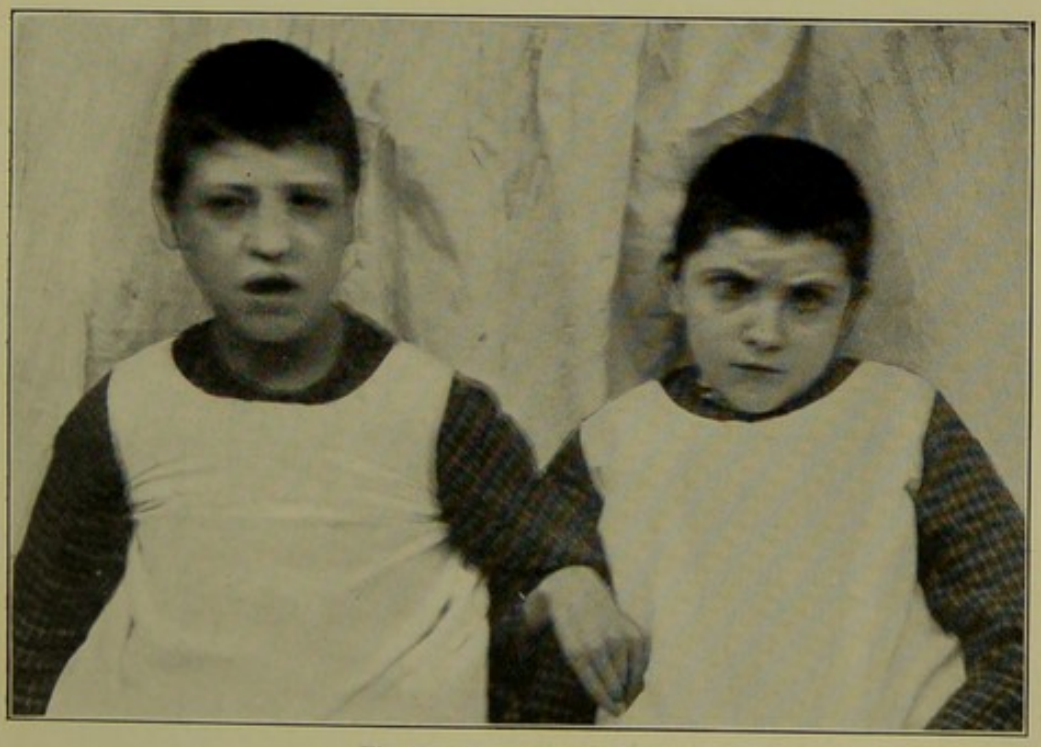


Fig. 293.—Two epileptic idiots

extent of our latest knowledge. Almost any of the types of the divisions here made use of may be congenital or acquired. The term idiocy itself is generic, including as it does all degrees of mental impairment in early life. But the variations in degree or intensity of the mental weakness are indicated by the expressions: *idiocy*, for the lowest degree of mental disability; *imbecility*, for a higher degree, and *feeble-mindedness*, for the cases of idiocy in which the psychic faculties have their highest development. There is some confusion in literature as to the exact limitation and application of these degrees. Sollier has made an attempt to distinguish idiocy and imbecility, but his definition of imbecility is not tenable, in the opinion of the writer, for he describes a certain small class of imbeciles as representative of the whole order. It is to be remembered that in each of these degrees we have many gradations, and the entire series, from absolute idiocy to a normal state, leads up by progressive stages through various types of idiocy, several steps of imbecility, and numerous shades of feeble-mindedness, until the borderland between the highest degenerate and the normal individual is almost indefinable.

The highest group includes a rather well-defined class of feeble-minded: the "backward children," the *enfants arrières* of the French, the *tardivi* of the Italians, and the *Geistig-zurückgebliebene* of the Germans. The difficulty is not so much in the delimitation of this class, as in the separation of the group of idiots and imbeciles. It is easy to make the classification on seeing the cases, but to convey to others the differentiation by description is far from being so, because of the many features—physical, motor, and mental—which are concerned in such division. The writer, while employing the term idiocy often to include all of these degrees, would define the idiot proper as an individual able to give little or no care to his person; incapable of intelligent communication, barely able to express his material wants, most awkward and ungainly in his movements, if he move at all, and presenting marked evidence in his lack of expression, apathetic attitudes, and physical stigmata of degeneration, of the profound stunting of his mental and physical development. On the other hand, the imbecile is able to care for his person and dress, attend to his physical wants, comprehend fairly what is said to him, carry out orders more or less intelligently, is often able to speak well (though sometimes speech may be impossible to a very intelligent imbecile); if not paralyzed, he has good use of all his muscles; he is not destitute of expression, though the expression may vary from an evil, mischievous, cunning cast of countenance to one of rollicking good nature; there are fewer stigmata of degeneration in this class than among idiots.

The clinicopathological grouping of the varieties of idiocy which the writer has found most useful to him in his work at the Randall's Island Hospital for Idiots is as follows:

1. Hydrocephalic idiocy.
2. Microcephalic idiocy.
3. Paralytic idiocy.
4. Epileptic idiocy.

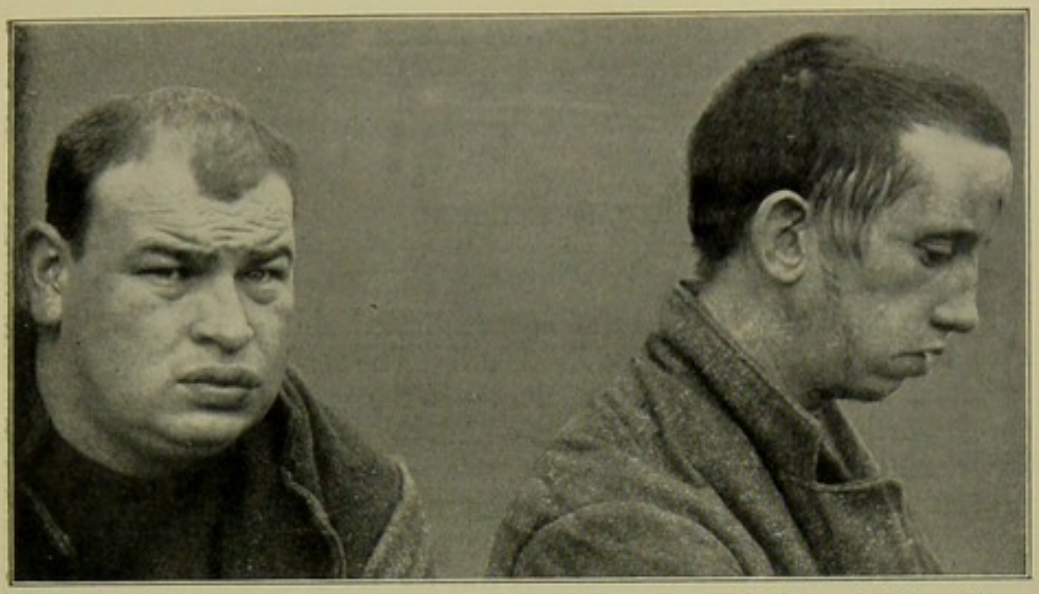


Fig. 294.—Epileptic idiocy.

Fig. 295.—Imbecile, with extreme dolichocephaly. (Length-breadth index, 51.)

Fig. 296.—Hemiplegic idiocy. (Blainville ears.)

Fig. 297.—Microcephalic imbecile.

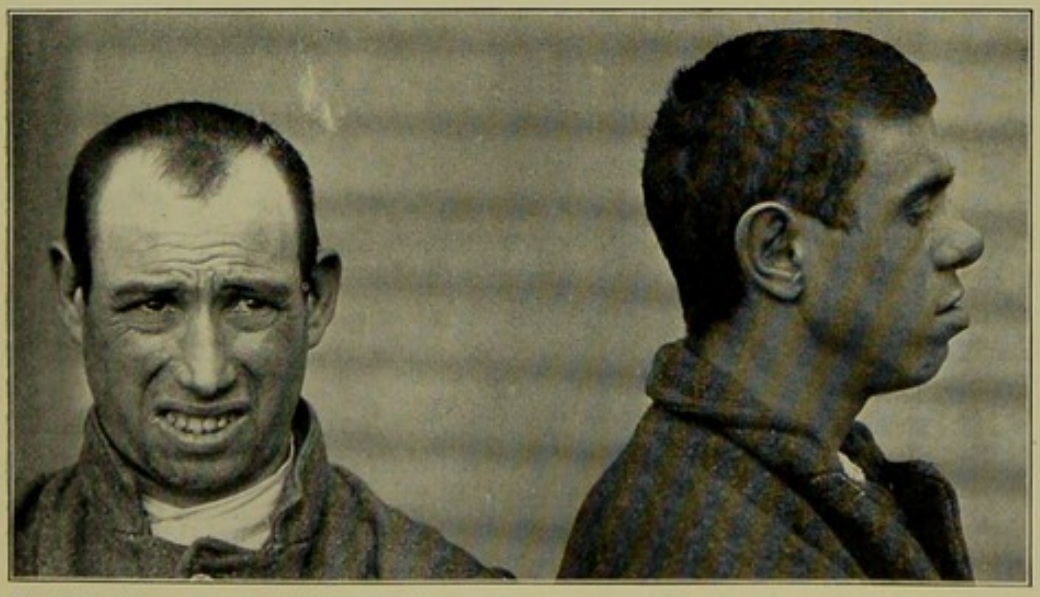


Fig. 298.—Idiocy as a result of dementia from acute insanity in childhood.

Fig. 299.—Epileptic idiocy.

5. Traumatic idiocy.
6. Sensorial idiocy.
7. Meningitic idiocy.
8. Myxedematous idiocy, or cretinism.
9. Amaurotic idiocy.
10. Idiots savants.

It is impossible, in the brief space allotted this subject, to discuss these various forms of idiocy in detail. The reader must be referred to special works and articles on idiocy—to the general works of Downs, Shuttleworth, Voisin, Sollier, etc.—and to the monographs by the writer and others. Hydrocephalic, microcephalic, paralytic, epileptic, and traumatic idiocy are readily recognized by their symptoms or history. Sensorial idiocy is a form due to the congenital or early loss of two such senses as sight and hearing. Properly treated, these patients are capable of normal mental development (Helen Kellar and Laura Bridgman). Meningitic idiocy can usually be diagnosticated only by autopsy, unless the history or exacerbations in the course of the disease demonstrate its origin. Cretinism is a rare form which has been fully described in many brochures in recent years. The amaurotic form is still rarer. There are only two of these in the Randall's Island Asylum among many hundreds of idiots.

The term *idiots savants* is applied to all such idiots, imbeciles, or feeble-minded as exhibit special aptitudes of one kind or another, always out of proportion to their intellectual development in other directions, and often remarkable as compared with similar accomplishments or faculties in normal individuals.

There are many cases of the kind recorded in literature, and it is not at all uncommon to hear of idiots in our newspapers and museums who are exhibited as musical prodigies, "calculating boys," and the like. Beyond the fact of the existence of such curiosities, and the record of their deeds, there has been little or nothing written in explanation of these phenomena. The psychology of the condition is exceedingly obscure; and even were the psychological processes which underlie special aptitudes understood, there would still remain the mystery of the manifestation of particular talents or faculties in minds otherwise blank or defective.

The aptitudes may be summarized as follows:

Arithmetical faculty, musical faculty, special memories, imitative faculty, modeling faculty, delineative faculty, faculty for painting, aptitude for games (draughts, etc.), aptitude for buffoonery. (See article by author on "*Idiots Savants*" in Appleton's "Popular Science Monthly," December, 1896, in which a history of some remarkable examples is given. See also page 777 of this book.)

General Etiology.—There are nearly twice as many male as female idiots. In idiocy due to prolonged or difficult labor, this disproportion is even larger (three males to one female)—a fact to be explained probably by the larger size of the male infant. The causes of idiocy may be classified as follows:

Fig. 300.—Paraplegic idiocy.

Fig. 301.—Idiocy after acute insanity of childhood. Peculiar tic of fingers.

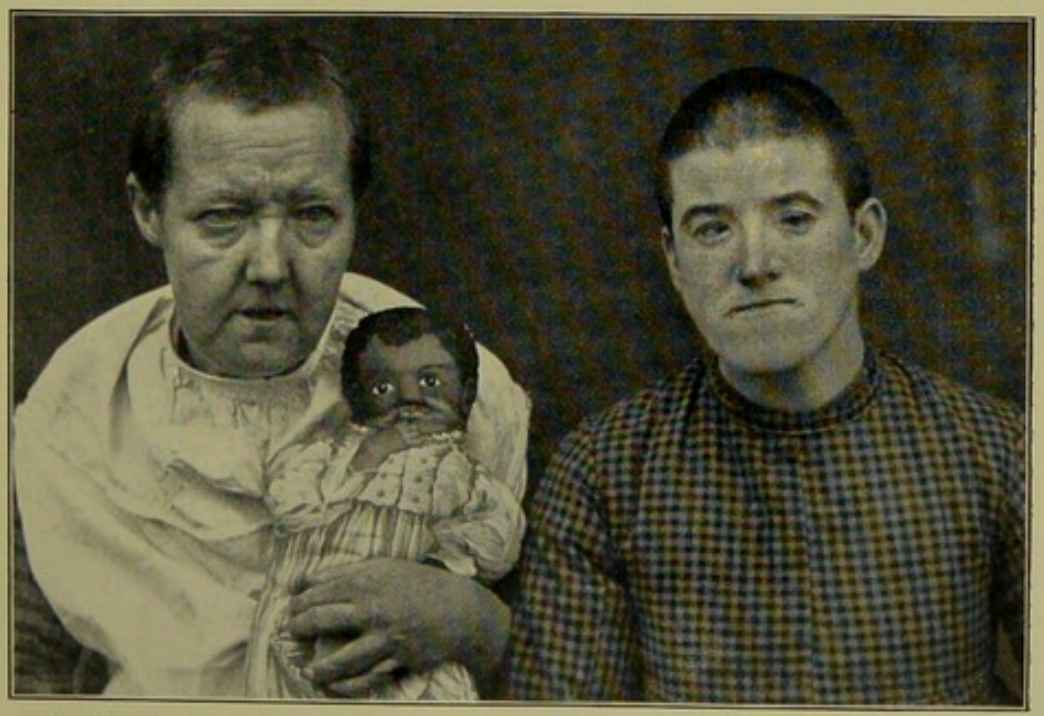


Fig. 302.—Two imbeciles, one epileptic and one of unknown origin (both homosexual perverts).

- **Degenerative**
  - Hereditary transformation of nervous and mental diseases.
  - Pathological heredity in the form of vitiating diseases or habits (tuberculosis, rheumatism, gout, herpetism, syphilis, alcoholism, etc.).
  - Sociological factors (extreme youth of parents, extreme age of parents, disproportionate age of parents, consanguinity).
- **Adventitious**
  - **Gestational**
    - Maternal: Trauma, shock, fright, diseases, maternal impressions.
    - Fetal Disorders: Syphilis, heart disease, arteritis, morbid processes in the brain and meninges, twin pregnancy.
  - **Parturitional**: Difficult labor, primogeniture, premature birth, asphyxia at birth, instrumental injuries, pressure on the cord.
  - **Postnatal**: Convulsions, cerebral diseases, trauma to the head, febrile diseases, mental shock, sunstroke, overpressure at school.

The relations of heredity to idiocy are much the same as those of heredity to the psychoses described in the chapter on General Etiology of Insanity. The statistics available (such as those of Shuttleworth and Beach, Langdon Down, Kerlin, and Piper) seem to show neurotic inheritance in about forty to fifty per cent. of idiots. The stigmata of degeneration, which are so marked in idiocy, are described in an earlier chapter. As regards tuberculosis and scrofula in the parents, the percentages of these authors vary from fifteen to thirty per cent. Alcoholism takes a high place among the causes of progressive hereditary degeneration (nine to sixteen per cent.). The writer has found that hereditary syphilis is a comparatively rarer cause of idiocy than many would suppose, and this is supported by the statistics of the authors named above (one to two per cent.). As regards consanguinity, the statistics show that the proportion of idiotic offspring of cousins to the number of idiots is very slightly in excess of the number of consanguineous marriages to marriages in general.

Gestational causes vary, according to the statistics, from eleven to thirty per cent. Parturitional factors (meningeal hemorrhage from prolonged labor, asphyxia at birth, premature birth, pressure on the cord, forceps injuries, etc.) are active in about eighteen per cent. It may be said that forceps injuries are far less dangerous to the child than tedious labor. Among adventitious causes infantile convulsions occupy a preëminent position (over 25 per cent.). But we must remember that the convulsions may act as a real cause, by inducing meningeal hemorrhage; or convulsions may be merely an associated symptom of a meningeal hemorrhage or other pathological condition due to some other common factor. Cerebral diseases (meningitis, hydrocephalus, hemorrhage, thrombosis, embolism, tumor, and abscess) follow infantile convulsions in the statistical table of causes (eight to nine per cent.).

Acute febrile diseases induce idiocy in some six per cent. of cases.

These diseases are scarlet fever, measles, whooping-cough, typhoid fever, small-pox, and diphtheria. How they act is not yet known. Sometimes it is through meningeal hemorrhage induced by the convulsions so common at the onset or during the course of these maladies. Possibly at other times it is through an infectious encephalitis, or microbic embolism or thrombosis. Trauma to the head, mental shock, sunstroke, and "cramming" at school have a small, yet appreciable, share in the production of idiocy (probably two to five per cent. altogether). The author has found, in his own experience, that insanity in children is an occasional cause of idiocy. In the adult such mental enfeeblement after insanity is a secondary dementia, but in the growing child this secondary dementia is preferably termed idiocy.

General Symptomatology.—Since idiocy, as well as its varying degrees of imbecility and feeble-mindedness, depends upon some sort of congenital or acquired defect or disease of the brain interfering with its normal evolution, it is clear that the cerebral functions may be all of them more or less involved, and that no particular psychic faculty can be selected as the one whose disorder retards or influences the development of the other faculties. Seguin is, therefore, hardly correct in stating that the condition of the mental faculties in idiots is normal, though diminished, and that merely the will is lacking to give them proper direction. Sollier has given us one of the best and latest studies of the psychology of idiocy.[1] Following Ribot and others, he maintains that the slow development of the cerebral faculties is due to want of attention; that spontaneous attention is caused by affective states brought into action by sensations, and that those young children are the most attentive whose nervous systems are most easily stimulated. Hence the faculty of attention is closely related to the activity of the sensations. The greater the power of attention, the more intelligent does the individual become. In idiocy, owing to the diminution or loss of the power of attention, the perceptions aroused by sensations are more or less indefinite, and the resultant idea likewise ill-defined. Sensations become more numerous as the organism develops, and the lack of ideas and recognitions becomes more noticeable.

Following somewhat the natural order of such examination, with the excellent work of Sollier[2] as a guide, we first take up the senses, those avenues which lead to psychological development.

Sight.—Between seven and eight per cent. of idiots are congenitally blind. It is necessary to determine whether the blindness is due to defect of the visual apparatus or to lack of attention. Blindness does not preclude the possibility of education, for some idiots with defect of this sense may be educated to a moderate degree. When idiots can look, without in reality seeing, the apparent blindness is due to a complete absence of attention. In idiots less affected, a greater variety of objects will attract their attention. In the higher grades of idiocy (imbecility and feeble-mindedness) vision may be as good as in normal

[1] "Psychologie de l'idiot et de l'imbecile," Paris, 1891.

[2] The author, while differing from Sollier materially in some of his conclusions, is indebted to his work for many of the details of the psychological symptoms of idiocy.

man. But many present certain visual and ocular defects, such as hypermetropia, defective color-vision, strabismus, nystagmus, congenital cataract, inequality of the pupils, microphthalmos, and the like. In hemiplegic idiocy or imbecility we may find hemianopia. But the determination of the acuity of vision is difficult in this class of individuals. The perception of different colors is often possible in the milder degrees of idiocy. Good binocular vision is uncommon in idiots. The normal child takes pleasure in the sight of objects as early as the eleventh day, the eyes are normally coördinated by the end of the second month, and he begins to distinguish colors correctly at about the age of two years.

Hearing.—There is a somewhat analogous condition of the organs of hearing. It is not always easy to determine whether an idiot is deaf from defect in the auditory apparatus or only sensorially deaf. Idiocy of mild degree is not infrequently induced by deprivation of this sense. In the higher grades of idiocy hearing is nearly always normal. Deaf-mutism can not be considered as common. The normal child hears on the fourth day, and is pleased with music in the second month.

Taste.—This sense is frequently affected. Gluttony is a marked feature in idiocy. It is common for idiots to eat without mastication; many present a precocious taste for alcohol. This is especially true of the higher grades. A difficulty in distinguishing the simple tastes (salt, sweet, bitter, and sour) is not infrequently met with in the milder types, as well as in those with great mental impairment. Inversions and perversions of taste are observed. The normal child evinces a sensibility to taste at the end of the first week.

Smell.—In the normal child strong-smelling substances produce mimetic movements on the day of birth. In idiocy the sense may be much impaired, perverted, or absent.

Tactile Pain and Muscular Sensibility.—As a rule, sensibility to touch and pain is uniformly diminished in idiocy of all degrees, mostly through lack of attention. There may be complete anesthesia and analgesia, particularly in the lower grades. On the other hand, there are cases in which the sense of touch may be educated to a high degree of delicacy. It is almost impossible to study the muscular sense in idiots, but it is apt to be impaired in proportion to the other senses. The normal child starts at gentle touches on the second and third days, and manifests muscular sense as early as the eighth week.

Thermic Sensibility.—What has been said of touch and pain applies likewise to the temperature sense. But their vasomotor systems are susceptible to the influences of cold and exposure, and their resistance to external influences and diseases is such that many of them die of pulmonary affections. Some become more stupid in cold weather and brighter in warm weather, while an elevation of bodily temperature (fever) is accompanied by evidences of more active cerebration.

Morbid Movements.—A small number of idiots exhibit no motility at all, but remain perfectly inert. But the majority are apt to be in constant motion. These movements tend to take on a rhythmic and automatic character. I do not here refer to such morbid movements as epilepsy, athetosis, associated movements, ataxia, and chorea, often

present in paralytic idiocy ; nor to tremor, found in sclerotic cases ; but to a group of automatic or impulsive movements.

These forms of movements are among the most common and striking symptoms immediately noticed in going through an institution for idiots. A very large proportion of the inmates are observed to be in continual motion. As a rule, the most frequent rhythmic movement is an anteroposterior oscillation. The patient, in a sitting attitude, sways his body slowly or rapidly backward and forward. Sometimes the oscillation is from side to side. Occasionally the hands and fingers are rapidly or slowly flexed and extended, and brought up to the face in movements similar to those in athetosis, but differing from them in that they are entirely subject to the will, just as are the oscillations alluded to. Walking to and fro, rotating, dancing, and so on, are more elaborate forms of the same kind of impulsive movement. Similar movements occur in the insane, as is well known, and particularly in conditions of greatly enfeebled mind, such as secondary dementia. They are spontaneous movements, seeming to have no relation to any stimulation of the brain giving rise to a motor expression. Generally the movements cease for a time when any sensory impression, such as the appearance of a stranger in the room or being spoken to, temporarily alters the feeble current of thought or excites the mental blankness which has given rise to the automatic movement. Children and young animals are full of spontaneous movements, undoubtedly due to impressions received at some time during their lives, or, it may be, impressions inherited ; and, while these spontaneous movements of children are undoubtedly similar in their nature to the automatic movements of dements and idiots just described, they do not often present the rhythmic character of the latter. It is probable that in the feeble mind, upon which nerve stimuli seldom make an impression, the simple old motor expressions are retained, repeated, and become habitual or automatic. Automatism of movement is thus a sign of little aptitude or impressionability, so far as fresh mental stimulation is concerned. In the idiot the impulsive rhythmic movements just described may be regarded as the habitual motor expression of the simplest and oldest stimuli ; whereas, in the secondary dement, the analogous automatic movements are to be looked upon as reversions to the spontaneous movements of infancy. The smiles and grimaces of idiots and imbeciles belong to the same category of infantile spontaneous motor expressions.

There is probably a certain amount of pleasure in the movements in many cases, as sometimes they manifest displeasure if prevented from executing them. There is nearly always a difficulty out of proportion to the intellectual development for idiots to perform associated movements with a definite object. They may be able to talk and read, and even write, yet be unable to dress themselves. This is often a fault remediable by education, according to Seguin.

Right-handedness and Left-handedness.—Some twelve per cent. of all children, idiot and normal, are left-handed ; but while eighty-eight per cent. of normal children are right-handed, only seventy-two per cent. of idiots use their right hand in preference, the remaining sixteen per

cent. being ambidextrous. This peculiarity is said to be present also among criminals.

Voluntary Movements.—Many idiots do not learn to walk at all, either because of general debility, inability to learn, or paralysis. In such as do acquire the ability to walk there is great retardation in its acquisition. This is also true of other uses of the voluntary muscles for the common acts of daily life, such as carrying food to the mouth, and so on. They are either never learned or they are acquired late.

Organic Sensations.—The keenness of visceral sensibility is more or less diminished in all idiots. The sensations of hunger and thirst are lessened, though only very rarely absent. The feeling of satiety after a hearty meal is seldom felt by them; so that if left to themselves, they would eat on indefinitely. The necessity of defecation and micturition is not perceived at all by profound idiots. In the lower and middle grades of idiocy it is often difficult to diagnosticate visceral disease, owing to the bluntness of somatic sensations, and they may die without giving any appreciable symptoms. This masking of disease in idiocy is quite analogous to the masking of disease in various insanities. The feeble-minded and imbeciles not infrequently mislead the physician by exaggeration, concealment, or falsehood.

Attention.—The lack of the faculty of attention is one of the chief characteristics of idiocy. Naturally, it varies in degree from complete nullity to a simple diminution of the faculty, but it is always lessened. The fundamental elements of the faculty are deficient. These fundamental elements are: The integrity of sensory impressions delivered to the brain; an emotional state of pleasure, pain, or interest in such sensations; motor expressions in the eyes, face, limbs, or body of the impressions received. There are two forms of attention, according to Ribot and Sollier, one of which is natural or spontaneous, and the other voluntary, established by education. The latter can not exist without the former.

There are two qualities in attention that are of importance—viz., intensity and duration.

Thus, attention is impaired in idiocy by the defective senses, which convey to the brain feeble impressions. The second element, the affective state, is notably lacking in idiots. The motor factor of attention is deranged in idiocy in a great variety of ways (general weakness, paralysis, contracture, epilepsy, chorea, ataxia, automatic and impulsive movements, and the like). The intensity and duration of attention are restricted to the last degree in this class of individuals.

The intelligence and the possibility of education depend directly upon the power of the faculty of both spontaneous and voluntary attention. It is probable that the faculty is localized chiefly in the frontal lobes of the brain. Ferrier considers it proportionate to the development of these lobes, and some very convincing experiments recently published by Bianchi make it quite certain that the frontal lobes are the seat of this faculty. In idiots great lack of attention is coincident with diminutive size of the frontal lobes.

In the low grades of idiocy spontaneous attention is almost null,

and education is impossible. The higher the degree of idiocy, the greater the degree of spontaneous attention presented, which may be so appealed to as to develop it into voluntary attention, with intellectual progress as a consequence. With idiots, as with the lower animals, attention is always connected with the sense most perfectly developed, which, in the former, is that of sight. The attention of idiots is most easily aroused through the eyes. Exercises of the attention may thus be employed in the diagnosis of states of intellectual weakness. We find idiots without attention absolutely ineducable, leading a vegetative existence; others, again, exhibiting both spontaneous and voluntary attention, but in flashes, as it were, of brief duration and faint in nature; and still others more or less capable of prolonged and habitual attention. It is only in the last-named group of individuals that education is to any considerable degree feasible. The education appeals in some to the simplest sentiments only (such as curiosity, selfishness, the desire of reward), in others attention is aroused by appeals to a higher affective order (such as interest, ambition, and emulation), and in still others attention may be aroused and sustained by habit.

Since the power of attention directed to external events is so feebly developed in idiots, it is not surprising that attention to internal happenings, or reflection, should be totally absent in all grades of idiocy.

Ribot regards voluntary attention as habitual and disciplined spontaneous attention, as an adaptation to the conditions of a higher social life, as a sociological phenomenon. When the development of voluntary attention is rudimentary, and the resulting intellectual defect is marked, as in the lower grades of idiocy, there are no serious consequences from the sociological point of view. Sollier calls the idiot *extra*-social, and makes the imbecile quite distinct as *anti*-social, claiming that in the latter there is an undefined amount of voluntary attention, combined with a relative, though perverted, intelligence, which two factors render him often a dangerous member of society. He speaks of the instability of the attention of the imbecile. At one moment it may be faint, at another intense as in normal man. He passes from one subject to another with the greatest ease, a characteristic which may even be observed in his infancy. Serious matters must be continually repeated to him to make him understand. He grasps the first part of a sentence, and forms his ideas from that, without waiting for the sentence to be completed. He frequently interrupts, and there is no time to answer one question before another is put. Sollier further goes on to say that this instability of the attention for external objects or ideas is seen also in the acts of the imbecile, who is incapable of intelligent labor, and accomplishes his tasks, when uniform, by a certain kind of automatism, without due appreciation of the object of his work. When the object is understood, the imbecile believes he can attain it immediately, and, seeing the first step only, is prevented by failure of attention from properly completing the work or doing it at all. He seems to forget that he has begun, and as a consequence, unless watched, may spoil whatever he attempts. Other imbeciles refuse to work, but make themselves very busy and important in watching and supervising the occupations of others.

Sollier calls them vagabonds. They wander away not knowing where, marching straight before them, with indifference to the welfare of the friends or relatives they desert; traveling by night and hiding by day; undisciplined, indolent, and mischievous.

This attempt to separate idiots and imbeciles into two distinct classes of extrasocial and antisocial is, to my mind, not justifiable. Sollier has here described a certain class of imbeciles only, and the description is very true to nature, but it is only a group which does not merit an especial classification. As regards attention, we should still hold to the terms idiocy, imbecility, and feeble-mindedness, as representing degrees of lack of attention, from complete or almost complete absence to mere diminution of the faculty. The adult imbecile, in the middle grade, would have the varying and imperfect attention of a backward child, and his ideas, speech, and conduct would vary with his temperament, with his docility or perversity; in short, with the innate differences of character and individuality, which may be as manifest in imbeciles as in normal children. Imbeciles may and do become vagabonds, uncertain, mischievous, indolent, antisocial; but they may, on the other hand, be good-natured, trusty, docile, industrious. Many of them, too, may show special aptitudes in certain directions. As to education, the difficulties are that in some it is hard to attract the attention, and in others to maintain it.

Reflection.—The internal form of attention (reflection of Ribot), in which images and ideas constitute the subject-matter, is quite deficient in the lower grades of idiocy, but is present in imbecility and feeble-mindedness in varying degrees. It is never perfectly developed, as in normal man.

Preoccupation.—This is absent in profound idiocy and feeble in the higher grades. A small proportion of imbeciles are capable of preoccupation, but of an indefinite nature, and sometimes taking on the character of a fixed idea. Often their interest is not aroused so much by what benefits and interests mankind in general as by bad actions, criminal or egoistic sentiments that attract their attention and arouse reflection and preoccupation which may result in felony or crime. Many are too selfish to care for the troubles of others, and too stupid to have preoccupations purely intellectual.

Instincts.—The instincts in idiocy are generally defective. The defect may be imperfection of development or an actual derangement or perversion. The instinct of hunger is present in almost all grades of idiocy, and is so little inhibited that it is often pushed to the extent of gluttony. The instinct of self-preservation is impaired in nearly all, absent in profound idiocy, ungoverned by proper judgment in the milder forms. In some there is no sense of fear, and self-injury is possible. In others there is a comprehension of danger and an avoidance of it, or possibly an overweening egoism which may lead to a belief in their power to overcome it. Suicide occurs in imbeciles and feeble-minded, sometimes without determinable cause, sometimes as a result of morbid impulse.

Sleep is good among all classes of idiots, while in the lower grades

it may be both profound and excessive. Whether they dream or not depends solely upon the degree of mental development.

The desire and need of voluntary muscular movement varies with the scale of intelligence, being absent in the profounder degrees of idiocy, and approximating the normal the higher the psychic development. The automatic and impulsive movements in some may represent a fulfilment of the normal need, and the extreme restlessness of others is surely a perversion of the natural desire.

The sexual instinct may be absent, impaired, exaggerated, or perverted. It is seldom normal. Idiots of all degrees present many degenerative stigmata as regards the genital organs, more numerous in direct proportion to the mental impairment. Among these anomalies are: cryptorchismus, unilateral or bilateral microrchidia, spurious hermaphroditism, insufficient development of the entire genital apparatus, hypospadias or epispadias; defect, torsion, or great volume of the prepuce; median fissure of the scrotum, imperforate meatus, abnormally large or small labia, excessive development of the clitoris, hypertrophied labia minora, pigmentation of the labia minora, imperforate vulva, atresia of or double vagina, and uterus bicornis. Puberty is often retarded, but occasionally is early; often it is normal. Masturbation is exceedingly common among all classes of idiots of both sexes. In the profound degrees it is automatic; in the higher it is purposive. Onanism *à deux* and sodomy are frequently discovered among imbeciles and feeble-minded, and sexual psychopathies of the most shocking nature are not uncommonly manifested in some because of the combination of the strong sexual instinct and absence of moral sensibility.

The instinct of imitation, which is a low form of instinct, and strong in children and many lower animals, is one to which idiots are very susceptible. It is usually a purely instinctive or passive imitation, seldom an intellectual or active imitation. Its intensity depends much, however, upon the scale of intelligence to which the idiot rises. It is very apt to be shown in the form which is concerned with moral contagion; so that the acts and language of the vicious, mischievous, coarse, and vulgar are most willingly imitated. Simulation is very common among the more intelligent classes of idiots.

Special Aptitudes.—In the so-called idiots savants we note the development of special aptitudes, occasionally remarkable, more often only noteworthy in contrast to the general mental vacuity. These aptitudes are usually in the direction of music, mathematics, the mechanical arts, building, wood-carving, drawing, painting, memory for facts or dates, playing games, and of a low order of wit or drollery. The occasional preëminence of some particular faculty, where all other traits are defective, would almost lead one to believe in a heterotopia of gray matter in some special locality. Music, the most sensual of the arts, seems to appeal especially to this class of individuals. Often the rhythm of it seems to influence the rhythm of their automatic movements, or it soothes their restlessness or stops their cries. Sometimes unteachable idiots are able to retain, recall, and hum a moderately diffi-

cult tune, while higher grades may learn to play instruments by ear, though not by note. Next to aptitude for music, that for mental arithmetic is often surprising. There are also occasional instances of the other talents just mentioned, and doubtless the court fools of the past, with their mischievous pranks and quaint remarks, were recruited to a great extent from the imbecile class.

Play.—There is a lack in all classes of idiots, and in direct proportion to the degree of mental defect, of that "superfluous activity which is expended in the form of play." The activity and attention of normal children are mainly developed through play. This avenue of education is, unfortunately to a considerable degree, closed in idiocy. The lower grades, if they manifest a tendency to play at all, do so in a rudimentary and solitary way, and in adolescence still cling to the simple games of infancy. With others, higher in the scale of intelligence, there is still defect of the play instinct, and a proclivity often to prefer games in which noisiness, destructiveness, and other evidence of rather brutal traits are paramount. Sometimes these games are carried on good-naturedly; at others, selfishness, irritability, quarrelsomeness, and a more or less ungovernable nature are evinced.

Civility and politeness may be taught to many, but naturally with difficulty to the lower grades and to such individuals of the higher as are hard to train in other directions, because of innate vices of temperament and character.

Destructiveness, a propensity even in normal children at an early age, is an especial attribute of all classes of idiots. In those of low degree it is automatic and possibly a rudimentary form of superfluous activity (play), but in some individuals of the superior grades there seems, at times, to be a vicious satisfaction in inflicting damage or injury, which may even lead to the manifestation of homicidal proclivities or a tendency to arson (pyromania). Self-mutilation or injury may be a result of the love of destruction in the profounder degrees of idiocy.

Sentiments.—In the lowest forms of idiocy the sentiments and sensations are rudimentary, or may be altogether absent. As a rule, one may discover various degrees of pleasure or pain, affection, pity, fear, social proclivities, love of property, regard for rights and duty, obedience, shame, esthetic feelings, curiosity, and the like.

Pleasure and pain are indefinite or absent sensations in idiots, felt to a greater extent by imbeciles, and well marked in the feeble-minded. Joy, sadness, and anger are usually aroused by physical sensations. The self-mutilation of some idiots points to an absence of the pain sense, and idiot women have been known to bear children without experiencing the pains of labor. Idiots often cry out suddenly, burst out laughing, or throw themselves about, which is probably explicable by variations of perception in the somesthetic sense. Moral pain or remorse, usually wanting, is sometimes developed to a slight extent. It is not often that these defectives weep, and if they cry, it is but for some momentary pain or deprivation. They live in the present only, and do not concern themselves about the past or future. In the higher grades it is physical, seldom moral, pain that is taken note of. Pleasure is

as little experienced as pain in the lower degrees, and laughter is as infrequent as crying. Pleasure is expressed by imbeciles and the feeble-minded by laughter, clapping the hands, or cries, though laughter, even with these, is uncommon. There are, however, certain imbeciles that always have a good-natured smile, and laugh readily and excessively over nothing. Frequently the laughter is a true automatic movement, as infantile spontaneous motor expression.

Affection is a sentiment not uncommon in idiocy, though it varies with the degree, being often rudimentary, vague, indefinite, and probably inspired rather by the ministration to his wants than by the caretaker. It is found that nearly all forms, except the lowest, appreciate kindness and patience, and are repulsed and made unmanageable by brusqueness or cruelty. With certain imbeciles and feeble-minded, where the moral sense is not too much obtunded, true affection for individuals is manifested; but when the moral sense is deficient, affection is elementary or absolutely wanting, so that kindness is either unappreciated or at once forgotten.

There are variations of the same nature in *love* for the family and in *friendship*. Absent in the simplest idiots, it may be shown in greater or less degree in the higher grades. In some it is unstable, changeable, and influenced much by the selfishness of the individual. In others, again, there is a perversion of family love, so that they are hateful and disagreeable to their parents or brethren. It is much the same with friendship. Often mild types of idiocy form in asylums friendships for one another, though they are too often apt to be associations of a sexual nature or for the purpose of combining together for mischievous purposes. A true solidarity of interests or social proclivity is seldom observed. Maltreatment of animals by idiots is usually due to ignorance, but there are moral imbeciles who perpetrate cruelties on animals as well as human beings from pure perversity and love of inflicting pain. The passion of *love*, when it exists, which is extremely rare, is founded altogether upon a physiological basis. *Jealousy* is sometimes, though infrequently, observed.

Pity is quite unknown in all degrees of idiocy. Some are amused or curious and some alarmed at the sufferings of others.

Fear is a common sentiment in all types of cases, more common than in normal persons, because of the want of understanding. Often the simplest occurrences inspire fear. On the other hand, when much excited, there are types that exhibit no fear at all.

Courage is wanting in all classes of idiocy. *Anger* is apt to manifest itself in all degrees and in every age. It is apt to be both causeless and paroxysmal, and to lead to the infliction of injuries upon the individual himself, upon inanimate things, or upon persons in the vicinity. The ungovernable rage is usually increased by efforts to restrain the patient.

Acquisitiveness is shown in imbeciles and the feeble-minded by a propensity for the collection of all sorts of useless objects and trifles, much the same as in cases of chronic mania. There is often a marked tendency to steal, sometimes deliberately, and at other times without

motive, merely to gratify the desire of possession. The lower orders appropriate everything coming in their way, having no regard for the property of others. Many can be taught acquisition as a reward for labor, and, on the other hand, there are some who can be made to work only through fear, having, as they do, an innate antipathy to occupation of any kind.

With respect to *rights and duty*, the perceptions of the idiot vary with the degree of mental and moral defect. In some even inferior idiots these perceptions may be present, while with some the rights of others are never respected, though to their own they may cling tenaciously, and the feeling of duty may never be instilled into them, because of more or less moral perversion.

Obedience and *respect for authority* vary, too, with the amount of intelligence and the degree of moral impairment. Quite simple idiots may quickly respond to the word of command. On the other hand, some of the most intelligent may perversely resist all attempts at discipline. Compensation and punishment affect them variously. Reward in objective shape or in the form of praise is seldom appreciated by inferior grades, and often unduly by the higher. Punishment, objective or in the form of blame, is useless for the simpler degrees of idiocy, where acts are unintentional, and in some of the more intelligent excites antipathy, an unreasonable sense of injustice, and often causes them to harbor a vengeful feeling.

A true *religious sentiment* is quite unknown in any form of idiocy. This is true also of the feeling of *shame*. The only esthetic sentiment found in these defectives is the *love of music* or rhythm, which is quite general among all classes, though not perhaps so noteworthy as it has sometimes been stated to be. Occasionally we meet with cases having unusual musical aptitude. It is rather a rhythmic noise which appeals to most of them, such as beating of a drum, hammering, the grinding of an organ (even if out of tune and discordant). They have no sense of beauty, but things bizarre, grotesque, glittering, and colossal attract their attention. *Curiosity* and *astonishment* are aroused more readily through the sense of sight than that of hearing, and are often more easily roused in some of the lower grades than in the higher types of idiocy.

All classes evince a marked *credulity*, and often it is difficult or impossible to eradicate an idea once established. Fairy stories are especially pleasing to many of them, just as they are to children.

Veracity is a virtue which is uncommon among idiots. Many imbeciles are particularly apt to be untruthful and deceitful with regard to their faults, doings, physical condition, things found in their possession, and the like. Naturally, the simple idiot, owing to his feebleness of invention, if given to lying, limits his untruths to the simplest matters, such as denials of accusations brought against him, etc.

Physiognomy and Expression and Character.—Idiots all show deficiency in their general appearance. There is always something ungracious, uncouth, ugly in their figures, faces, attitudes, or movements. Very common among them are misshapen or asymmetrical heads, dwarfishness, lack of proportion of the limbs, stooping and

slovenly postures, deformities of the hands or feet, and awkward and wobbling gait. The expression of the face varies from complete apathy and absence of intelligence to a considerable play of features of a low order, such as constant laughing, making faces, leering, or scowling. Besides the absence of those facial traits which are made on the face by the mind, the ugliness is generally added to by asymmetry, disproportion or deformity of the features. The eyes may be too close together or too far apart, or deformed by disease of the iris, cornea, or lids, or by squint. The nose deviates or is malformed, the ears are unshapely and unequal, the mouth half open, the teeth diseased and neglected; the chin deviated, prominent, or retreating; the forehead low and bulging or inclined. Microcephalus, hydrocephalus, and cretinism give their own ugly individuality too well known to need description here. Where a head is shapely and a face has any vestige of pleasing lines, it is generally fair to infer that the mental state is due to deprivation of one or more senses, or to the insanity of childhood.

As to *character*, this, too, varies with the amount of mental defect, and is difficult to analyze. In profound idiots there are often sudden accesses of excitement without apparent cause. In higher types the basis of character is inconstancy, weakness of will, and blunting of the sensibilities, their humor depending largely upon their environment, showing an appreciation of kindness and resentment of ill-usage. Some are clever and good-natured and funny, often making sharp remarks or doing amusing things, and at one time such cases were in great demand as court or family fools. History shows there were two kinds of fools made use of by royal and noble families—the true or natural fools (idiots or imbeciles), who were the first to create the profession, and their crafty imitators, the artificial fools, who made of it a profitable calling.

I should differ entirely from Sollier in his somewhat extraordinary distinction of imbeciles from idiots. He really selects one type of imbecile, while we know that there are many, and erects this single type into a great class which he everywhere distinguishes in his book as the imbecile. To him the imbecile is egotistical, boastful, vicious, careless, dangerous, a glutton, a vagabond, a mischief-maker, a sexual pervert, unstable, lazy, abusive, obscene, forgetful of kindness, vengeful, shameless, and altogether antisocial.

Language.—The primitive physical basis of language in the normal human infant is the auditory tract and the word-hearing center. It is essentially receptive. Then develops the word-comprehending center. After this the motor speech center is developed and associated with the primitive physical basis, thus establishing the emissive faculty. This rudimentary linguistic apparatus is variously defective in idiots. A defect in the emissive power is not so serious, as regards intelligence, as one in the receptive; for idiots of considerable intelligence may not be able to talk at all, while others very inferior may speak with readiness. Any part of this original physical basis of language may be affected, and the result to the defective individual will depend much upon what function is lost. The auditory apparatus may be imperfect.

The word-hearing center may not act. The word-comprehending center may be undeveloped. In such instances the intellect will suffer severely. Unlike the normal child, which comprehends many things said to it as early as nine months of age, in cases of this kind comprehension will develop very late, or perhaps never; yet occasionally with the development of the emissive power (without the word-comprehending center) words may be heard, learned, and repeated, constituting an echolalia—speech without idea. Supposing the emissive apparatus alone to suffer, we have hearing and comprehension and the development of the mind, yet without the power of speech.

Like an animal, the idiot may be intelligent, but speechless. The development of language and intelligence is not parallel. Sollier distinguishes two kinds of mutism in idiots—a motor and a sensory aphasia. In the first he can not talk, though he understands; in the second, nothing which is said is understood. Language is very late in development in idiots. The crowing of the normal infant is not often observed, but meaningless and monotonous cries take its place. The laryngeal sounds are earliest and best enunciated, the lingual and labial latest and least distinctly. Wildermuth classifies the dysarthrias and lalopathies of idiots into two groups:

1. Where the disturbance of speech is the direct expression of the intellectual density. They lack ideas, and consequently have not the words for the expression of them. In the lowest degree, the idiot is a vegetative automaton; in a less profound degree, he is like a child of two or three years, with imperfections of grammar and syntax.

2. When the disturbance of speech is a complication of idiocy, and is mechanical rather than intellectual, Wildermuth has rarely found stumbling speech in the idiot, and never stammering. These defects are sometimes found in imbeciles, who, moreover, talk a great deal and without definite object; who have onomatomania, and who are subject to transitory attacks of excessive and maniacal loquacity.

Considerable loquacity is occasionally observed in cases of acquired idiocy.

Next to hearing, the visual tract and the word-seeing and comprehending centers form a great receptive avenue for language and ideas. *Reading* will be impossible to such idiots as have defect of the visual apparatus or these centers, and the degree of acquisition of this power will depend upon the degree of defect. There are idiots who learn merely the letters, others who acquire monosyllables, and still others who can be taught to read laboriously. Sometimes such reading is purely automatic, without actual comprehension. The higher the grade of idiocy, imbecility, or feeble-mindedness, the greater the development of this faculty, though few of either class ever attain to perfectly correct reading.

The *writing* center and its association tracts are the latest portions of the linguistic cerebral basis to be established in normal cases, and in the idiot are apt to be the least well-constituted. In addition to its intellectual side, there is a complicated muscular coördination required in writing which also renders it more difficult for defectives of this kind.

They may be taught to reproduce letters, but the characters are meaningless to them. A few write quite legibly, though seldom or never well. As Sollier says, their writing is in reality drawing, and they like to copy printed letters, curved lines, and so on. There is a certain tendency to write with the left hand and to write from right to left.

In *drawing*, such as learn at all copy slowly and uncertainly, without perspective, and never draw without a copy or model; or they do the work impatiently, and, if given free rein, indulge in curious and fantastic scrawls, such as are figured in the works of Sollier, Bourneville, and others.

Intelligence.—Since intelligence depends upon the acquisition, conservation, association, and production of ideas, and these upon the condition of the sensory organs and centers and language centers, it is mainly in intelligence that the idiot deviates from normal man. The deviation varies much in degree, from almost total absence to a condition nearly approaching the normal. The idiot has fewer ideas than the imbecile, and the imbecile fewer than the feeble-minded. All classes acquire ideas primarily in the same way as the normal infant—through the senses; but while the normal child later on acquires ideas chiefly by means of language and imitation, the defective continues to make use mainly of the senses for this purpose, owing to the faulty development of the language centers. Preyer shows that questions and names are understood before the normal child can speak (nine months), while idiots, many years of age, may have an intelligent idea of the use of things, yet not know their names when heard, and be unable to speak them.

As regards concrete ideas, such as the different qualities of matter, it is noticeable that the idiot appreciates colors (particularly red), recognizes surfaces, avoids obstacles, and notices the difference between round and square, while distances and space are not comprehended. As Sollier correctly says, imitation, which is a source of ideas for infants, does not develop the intelligence of the idiot; for to him it does not furnish an idea, but creates a mechanism. In the superior grades of idiocy imitation creates an idea which is assimilated by the intelligence; but as the intelligence can not retain it, the result is the same as though it had not been assimilated. Still, it is not just to infer, from lack of intellectual expression, that there is complete intellectual inactivity. That ideas may exist in a brain apparently inactive is shown by the phenomenon of intellectual manifestation induced in idiots by severe pain, disease, etc. In other words, the intellectual receptivity of idiots may be greater than supposed, until some irritation occurs strong enough to show that the preceding stimuli have left their effects on the brain centers. Thus, Griesinger reports the case of an idiot who could only speak a few words until he contracted hydrophobia, when he began to talk of events which had taken place several years before.

As regards the *conservation of ideas*, we must remember, says Sollier, that memory is hereditary, organic, or acquired. Hereditary memory is extremely complex and difficult of explanation, but it apparently occurs in idiots. Organic memory, or unconscious memory,—viz., of

associated movements, such as walking,—although sometimes completely absent in idiots, owing to defective nerve centers and lack of attention, is, nevertheless, better developed than either of the two other varieties. For acquired memory, attention is still more a *sine qua non*, and consequently this is the least developed form of memory in idiots. Memory in an idiot develops slowly; at first its existence is shown only by the stimulus of some violent excitement. This indicates that memory exists in so far as the conservation of the image is concerned, but not enough for its reproduction under ordinary circumstances. In a higher degree of the development of memory, the idiot can recall the memory picture by seeing again the original object (memory for food, memory for places). Local memory, which does not act by satisfaction of a natural need, is only found in educable idiots (remembers his own bed, etc.). This memory is fixed by repetition of the sensation, and has not an emotional basis. These varieties of memory are simple, and do not necessitate language. As soon as language exists, a much wider field opens for the memory.

In simple idiots there is no association of ideas. The primitive forms of association, such as fear and the hope of reward, awaken no associated ideas in them, and even in the superior types of idiocy there is no great development of this form of memory.

It is a curious and inexplicable phenomenon that in certain cases of idiocy there may exist particular, specialized memories, such as for musical airs, dates, and numbers, although memory, in its usual and general sense, may be deficient. Indeed, as a rule, the memory is feeble in all classes of idiocy, and even in cases where the memory is fairly well constituted it is ordinarily mechanical, useless to the possessor, automatic.

Naturally, as abstract ideas result from reason, comparison, and judgment, such ideas are absent in the lowest order of idiocy. Profound idiots have no idea of differences of persons or things. Higher idiots may be able to appreciate superficial resemblances and differences, especially of color and form, but the discernment is so faulty that incorrect inferences frequently result.

Superior idiots appreciate resemblances more readily than differences. Simple generalizations may be possible, however, to all classes. In the lower types such generalizations occur only after long instruction, and, once this power is acquired, they may be fairly correct, but in many of the higher they are hasty and often faulty. In educable idiots, even those who can not talk, there is an appreciation of number, and they may be taught to count. Addition is more easily learned than subtraction, and multiplication can only be learned by those with fairly developed memories. Division can rarely be taught them, and neither idiots nor imbeciles can understand problems. The superior orders of idiocy can count automatically, but rarely are able to do so with proper understanding. They can say two and two make four, four and four make eight; but ask them how many are four and three and they are at sea. To count beyond ten, the number of the fingers, is rarely learned. But there are phenomenal instances where the mathematical

faculty is remarkably developed, as in the cases of the so-called "calculating boys," some of whom, it is true, are normal in other respects, but many of whom are mentally defective, belonging to the category of idiots or imbeciles.

The idea of *time*, past and future, has seldom a place in the brain of the idiot.

Ideas in the idiot are too feeble to be fixed ideas, and while the higher types are sometimes subject to morbid impulses, there is not a true fixed idea, with consciousness and pain. With them such ideas should rather be called tenacious ideas.

The *association of ideas* occurs by resemblance, contrast, and contiguity. In the profound idiots, with few ideas, there may be an association of them in a very simple way—viz., the sight of food is associated with the sensation of satisfied hunger, and so awakens the idea of eating. It is an association of sensations rather than of ideas. The association of ideas should arouse the critical faculty. The *judgment* and *reason* in idiots are very faulty. They are founded on an association of few ideas, lack precision and firmness, and find their expressions in ambiguous language. A judgment is not always the result of reasoning. For reasoning, there must be some obstacle to an immediate conclusion. Justice, promptitude, and firmness, which are qualities of judgment depending on the attention, are lacking in the judgments of idiots. The idiots judge very falsely on account of lack of attention and of an association of the simplest ideas. All their sense illusions give rise to false judgments. Firmness is lacking in their judgments, as they have so little interest in what they decide upon.

Many imbeciles and feeble-minded, however, maintain their judgments with tenacity. They often have a very high opinion of their own intellectual faculties. This presumption leads them often to extreme blunders. If one of their judgments is admitted to be just, they become very proud of it, and immediately set to work to form others, which are generally absurd. Doubt which suspends action is rarely seen in any form of idiocy. The first impression capable of forming for them a judgment is followed immediately by the act, like a true reflex. Syllogistic reasoning does not occur either in idiots or imbeciles. Errors of the senses proceed from the perceptive apparatus rather than from the sensory apparatus. Since in idiots and imbeciles sense perceptions are retained in brain centers either undeveloped or diseased, and the memory pictures are consequently either confused or false, the association of these pictures is consequently faulty. In idiots, as the images are weak, the perceptive reasoning is also weak or wanting. In the imbecile, where the images are more numerous, the association may be falsified by a badly acting perceptive center. In him the association occurs so often by contiguity, and consequently the deduction is very liable to be erroneous, as contiguous ideas are not necessarily related; hence, incongruous observations and unexpected actions.

Sollier emphasizes the difference between idiots and imbeciles, which may be seen in the delirium sometimes occurring in these cases.

Exceptional in the idiot, when it occurs it is always in the impulsive form, unprovoked and without motive. It is a delirium of acts. In imbeciles there are attacks of maniacal excitement, with impulsion to kill, to set on fire, or to break.

With respect to the *production of ideas*, there is little or none in the inferior types of idiocy, and in the higher grades the imagination is inchoate, of no utility, and often directed to things that are evil.

Will, Personality, and Responsibility.—The elder Seguin looked upon defect of will as the basis of idiocy, but the will is rather a diffuse than a local function of the brain. It has no definite seat in the encephalon, lesion of which would impair or destroy it. As Sollier says, will in its simplest form is manifested by actions accomplished for the satisfaction of natural needs, appetites, and desires. Accordingly, the individual must have a consciousness of those needs. Such a consciousness may be very much blunted in profound idiots, and consequently the will will be almost entirely lacking. Such an idiot is a spinal being, and his movements may be compared to the reflex phenomena seen in decapitated frogs. In higher idiots, the will is manifested by more complex movements, which are, however, capable of becoming secondarily automatic. Voluntary control of the sphincters occurs only in idiots who learn to walk, and not until they have learned. Volitions do not exist in the lowest order of idiots. The most natural desires and the most primitive instincts are absent. The first to appear is desire for food, but it may manifest itself simply by a stretching out of the hand or a cry. In idiots in whom the will is more developed, and also in imbeciles, it finds its expression more easily in actions than in inhibitions.

Self-respect, very little developed in the idiot, plays a very important rôle in the psychology of the imbecile, and by catering to it he can often be made to do things which would otherwise be impossible to obtain.

Intellectual movements, or acts accomplished under the influence of judgment or reason, are infrequent in the idiot, and not common in the higher grades. Many idiots are incapable of choice. When the power of choice is present, it is often exercised with difficulty. He does not quickly understand that of two things he must take one and leave the other—he wants to take them both. It is the same with ideas. Between two desirable objects, the superior type does not hesitate, but takes without reflection the one he sees first, which he may wish to exchange when he sees the second.

In idiots, whose will and motor volitions are so feeble, *suggestion* produces little or no results. It is the contrary in many imbeciles, except in those whose voluntary impulsiveness is too great. Ordinarily the higher grades are very susceptible to suggestion, as is seen by the facility with which mischief is done by a band of imbeciles which has been led on by one of their number. If suggestion is possible in imbeciles, it shows that the ideas which they already possess are very unstable, and are easily replaced by new ones. It has a great analogy with the suggestibility of the hysterical.

Consciousness and Personality.—As consciousness is but a phenomenon added to psychic processes, and not producing them, and as the personality is the coördination of psychic acts, it is necessary to form by deduction our conclusions as to these two attributes in the class of people we are studying. In absolute idiots it is not probable that any act is accompanied by consciousness. In higher idiots, in whom life is but little more than a succession of disconnected moments, it is not possible to say whether they have consciousness or not; but the personality, if present, must be very rudimentary, since an essential of its existence is a proper appreciation of the continuity of events.

For an individual to have consciousness of a psychic act, it is necessary that the exciting stimulus have a certain duration and intensity. Such factors in the stimuli are generally wanting in idiots; and so it is probable that most of their psychic phenomena occur without consciousness; and if there is consciousness, it must be very feeble. The distinction between the ego and the non-ego is not made by absolute idiots, and is but feebly present in the higher idiots.

In many imbeciles consciousness may be wanting or feeble, but in some it is clearly present, together with a perfect idea of their personality. Further, sometimes in delirium they have ideas of grandeur, showing an exaggerated conception of personality.

Responsibility.—All lower types of idiots are unable to manage their own affairs or to enjoy their civil or political rights, but those of a higher degree, who are at liberty, may have these rights.

Psychological Evolution.—In every degree of idiocy there comes a time, as Sollier well says, when the education stops and further mental progress ceases, and when the only hope is to retain the results which have been gained. This acme of development varies for the different psychic functions, so that one faculty may still improve, while another has already reached its cessation point. The senses continue to develop for the longest time, then the sentiments, and the intelligence the shortest. This is true of all classes, though the periods are longer in the higher grades, where all of the faculties are more equally and proportionally developed. Thus, in inferior types intellectual progress may cease at the age of six or seven, and the sentiments and senses continue their development to eighteen or twenty, while in superior grades the improvement of senses, sentiments, and intellect may cease about the same time—viz., at puberty.

Sometimes the faculties remain stationary, at others they retrograde when the limit of development is reached. Retrogression follows the same law as dementia—namely, progressive enfeeblement of will, intelligence, sentiments, and sensations, in the order named. When retrogression begins in the simpler forms it is very rapid, but in the higher types goes more slowly and more irregularly. Purely intellectual gifts which they have acquired (reading and writing) disappear very rapidly. In the intellectual downfall of the superior types one sees from time to time flashes of intelligence, like reflections from their weakening minds, but such are not observed in the lower forms.

General Pathological Anatomy.—There has been accumulated in

literature of late years a great deal of valuable matter relating to the pathology and morbid anatomy of idiocy, so that much new light has been shed upon a somewhat obscure subject. The investigations of Sachs and myself[1] into the causation of the cerebral paralyses of children, which are so frequently associated with the various degrees of mental impairment, from feeble-mindedness to profound idiocy, and in which we found meningeal hemorrhage to be so commonly the primary lesion, might well give rise to the belief that in a majority of cases of idiocy without paralysis and in idiocy associated with epilepsy we are confronted with the same initial lesion. The site of the meningeal hemorrhage is the determining factor in the establishment of the symptoms. If the Rolandic area be mainly implicated, either on one or on both sides, we have a hemiplegia or diplegia as the result, and these paralyses may be severe or light according to extent of the hemorrhage, and may be associated with idiocy or epilepsy, depending also upon the extent of the lesion and upon the amount of irritation. Again, I have seen a case in which there was left hemianopia, epilepsy, and very slight mental impairment, pointing to a meningeal hemorrhage over the right occipital lobe. Probably, too, some of the cases of arrested development of the speech, with or without enfeebled mind, are due to the same cause. It may be assumed also that meningeal hemorrhage often occurs as the initial lesion in what appears to be idiopathic epilepsy. The symptom or syndrome produced then will depend upon the location and extent of the initial lesion. Asphyxia at birth and convulsions shortly after birth are in themselves significant of meningeal hemorrhage, and in our study of etiology we observe the great frequency of these symptoms in the history of idiocy. At our autopsies, which are nearly always made years after the initial lesion, we find only terminal pathological states, such as atrophy, general sclerosis, and cysts, and, unfortunately, these conditions are not pathognomonic of antecedent hemorrhage, for they also are the terminal states for embolism, thrombosis, cerebral hemorrhage, meningitis, and meningo-encephalitis. What other evidence have we that proves the enormous preponderance of meningeal hemorrhage in the etiology of the terminal pathological conditions? It is in the testimony of the investigators of the causes of still-birth. For instance, Litzmann[2] examined 161 still-born children, finding in them 35 cases of meningeal hemorrhage. Parrot,[3] in 34 autopsies on the new-born, found 5 with blood in the arachnoid cavity and 26 with hemorrhage into the subarachnoid space.

The study of Sarah J. McNutt,[4] of New York, in 1885, of 10 similar cases added valuable testimony to that already given, and showed the relation between meningeal hemorrhage and asphyxia and convulsions in the new-born in a manner not to be gainsaid.

[1] "The Cerebral Palsies of Early Life, Based on a Study of One Hundred and Forty Cases," "Jour. Nerv. and Ment. Dis.," May, 1890. See also paper on same subject by author, Louis Starr's "Text-book of Diseases of Children," Phila., 1894, and Sachs' "Nervous Diseases of Children," New York, 1895.

[2] "Archiv für Gyn.," Bd. xvi, 1880.

[3] "Clinique des Nouveau-nés," Paris, 1877.

[4] "Amer. Jour. of Obstetrics."

Allusion is elsewhere made to Herbert R. Spencer's 130 autopsies in still-born children, in which there were 53 instances of hemorrhage from the pia and arachnoid.

Thus, the evidence before us in favor of meningeal hemorrhage as the initial lesion in a large proportion of cases of idiocy is most convincing. Some idea of the character of the terminal states found in idiocy may be derived from the studies of Wilmarth[1] and Bourneville.[2] The former communicates the results of 100 autopsies, which he summarizes as follows:

Sclerosis with atrophy, 12; sclérose tubereuse, 6; diffuse sclerotic change, 7; degenerative changes in vessels, ganglionic cells, or medullary substance, not constituting true sclerosis, 15; hydrocephalic, 5; general cerebral atrophy, 2; non-development in various forms, 16; infantile hemorrhage, 1; extensive adhesion of membranes from old

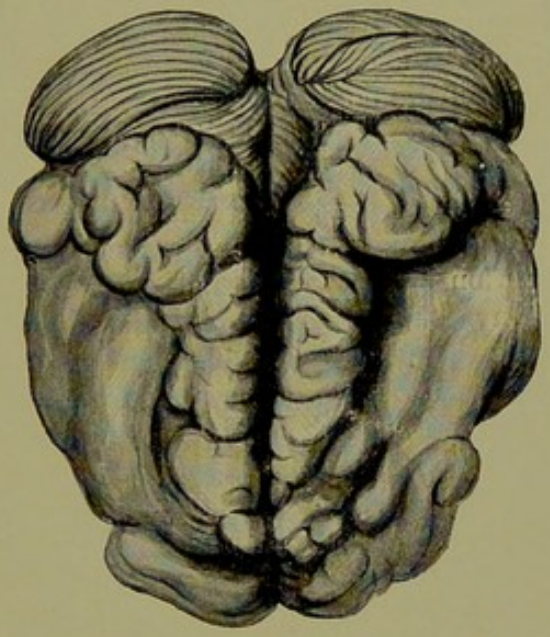


Fig. 303.—Brain of a diplegic idiot, showing atrophy of the convolutions over large symmetrical areas—not a true parencephalia. (See history of case, "Proc. N. Y. Path. Soc.," 1894, p. 94.)

meningitis, 3; angiomatous condition of cerebral vessels (with degenerative changes), 1; glioma (with sclerosis), 1; porencephalia (with non-development), 1; of 31 cases where actual disease or imperfect development of the brain proper was not demonstrated, there was hypertrophy of the skull, 6; acute softening (recent), 2; demimicrocephalic, 2; when the brain was above usual weight, but the convolutions large and very simple in their arrangement, 2.

Our examination of this summary discloses the fact that atrophies and diffuse sclerosis were demonstrated in 21 of the cases and tuberous sclerosis in 6. It is probable that the tuberous form of sclerosis has a pathology different from that of the diffuse form and more resembling the disseminated sclerosis of neuropathologists. Fifteen of Wilmarth's cases are recorded as presenting degenerative changes in vessels, gan-

[1] "Proceedings Ass'n Amer. Inst. Idiots and Feeble-minded," 1891.

[2] "Recherches sur l'epilepsie, l'idiotie," etc., Paris, 1880–1897.

glionic cells, or medullary substance, "not constituting true sclerosis." There was evidently some resemblance to sclerosis, or this author would not have qualified his description thus; and it is more than probable that the condition would have been pronounced one of genuine diffuse sclerosis by experts at the present day. Wilmarth notes 16 cases of non-development in various forms. He writes, in this connection:

"Non-development is found in several forms. A portion of the cortical substance may be thin, and, instead of following the typical arrangement of the fully developed brain, form a number of irregular folds, which may be so small and numerous as to resemble a mass of angle-worms."

This is evidently the condition which we know as microgyria, a true pathological process probably due to a vascular lesion (thrombosis or embolism), and not, therefore, a fault of development. Wilmarth's observations were made, many of them, years ago, before neuropathology had attained its present precision, and hence have not the value of later researches, such as those undertaken at Bicêtre and Upsala.

Hammarberg [1] has made one of the most valuable contributions to the study of the pathology of idiocy in literature. His study enters into the details of the examination of the brains of nine cases of idiocy, imbecility, and feeble-mindedness. Several of these were epileptic and paralytic idiots. His pathological investigations were controlled by the microscopic examination of twelve normal brains. The results were briefly as follows: In all of the cases of idiocy a more or less large part of the cortex showed arrest of development at a stage corresponding to either an embryonal period or the period of early infancy. Only a small number of cells reached their higher development or were destroyed during the growth of the cortex. The mental defects were in direct proportion to the defects of the development of the cells, and were greater the earlier the period of arrest of development.

As regards hydrocephalic idiocy, the true pathogeny of hydrocephalus is unknown. It is generally explained as being due to a chronic intraventricular meningitis, a congestion of the ependyma. But in many of these cases nothing abnormal is observed about the ependyma save thickening. It is possible that a careful study of the manner of secretion of the cerebrospinal fluid and of the relations existing between the ependyma and the external serous membrane of the brain may help to elucidate the origin of the disorder; for there is some reason for believing that a sort of current of fluid flows from the ventricles into the exterior serous cavity through the foramen of Magendie, the foramina of Mierzejewsky, and two other foramina which have been described, but are of uncertain existence. The ventricular walls secrete the cerebrospinal fluid and the exterior serous cavity absorbs it, according to this theory. Thus, then, there may be three processes by which primary hydrocephalus may be induced: hypersecretion in the ventricular spaces, occlusion of the foramina mentioned, and disorder of the absorbent apparatus. An interesting study of the subject along this line might be made.

[1] "Studien über Klinik und Pathologie der Idiotie," by C. Hammarberg, Upsala, 1895.

When the fluid begins to increase in the ventricles, these become dilated, as a rule equally, occasionally unequally, from obliteration of the foramen of Monro. The dilatation may be restricted to the lateral ventricles, or may include the third and fourth also. With the distention of the ventricles compression of the brain-substance takes place, giving rise to functional impairment of various kinds and degrees. With increase of pressure, atrophy of the compressed parts occurs. The septum between the ventricles may disappear and the brain-envelope become thin as paper, so that the hydrocephalus is like one enormous

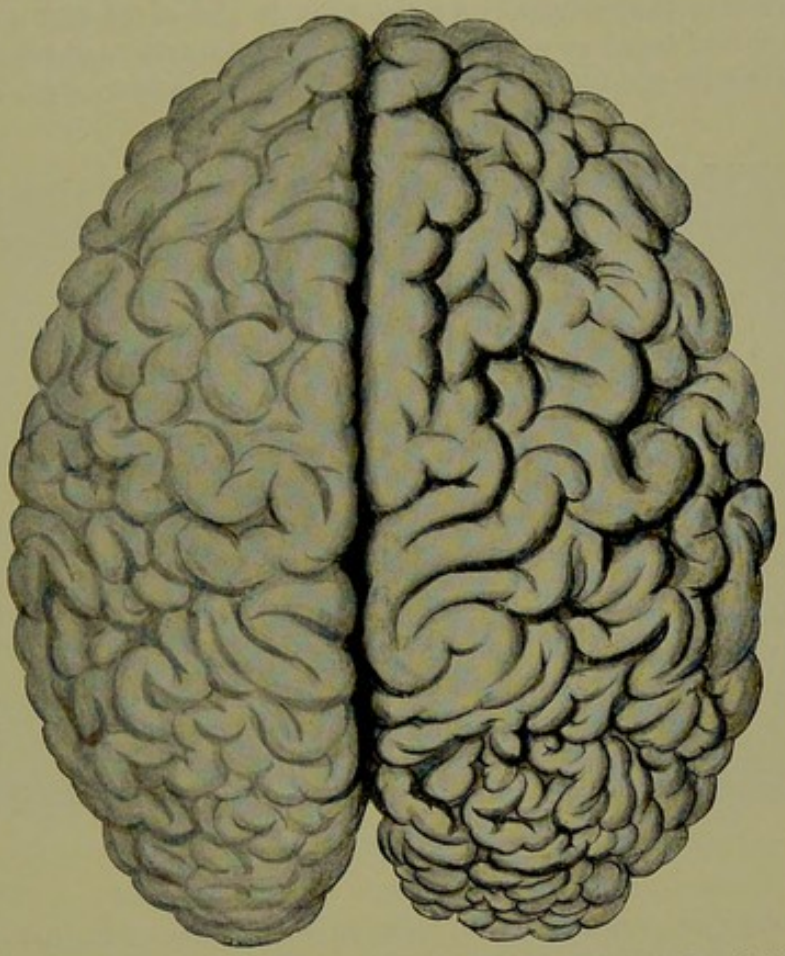


Fig. 304.—Brain of a blind hemiplegic idiot. Atrophy and microgyria in both occipital lobes. (See history of case, "Proc. N. Y. Path. Soc.," 1894, p. 98.)

cyst filling the cranial cavity. The basal ganglia and brain-stem become flattened. Examination of the cerebral envelope shows atrophy and degeneration of cells and fibers. The distention may go on until the cerebral tissues and the membranes vanish almost entirely. The amount of fluid has been known to reach six, eight, ten, twenty, and even twenty-seven pints. The following is an instance in point (a case from the Randall's Island Hospital for Idiots, the autopsy of which I reported at the New York Pathological Society. See "Proceedings," 1894, p. 94):

A female child, aged eighteen months; hydrocephalus, whether

congenital or acquired unascertained. Circumference of head, 51.5 cm.; anteroposterior diameter, 18 cm.; greatest transverse diameter, 15 cm.; naso-occipital arc, 32 cm.; binauricular arc, 34 cm.

Blindness and nystagmus; widely gaping fontanels; spastic diplegia; occasional convulsions, and just before death opisthotonos. At the autopsy sixty-four ounces of reddish serum were first removed by tapping the anterior fontanel. The skull and dura were exceedingly thin. The falx cerebri had disappeared. Cutting through the thin dura, nothing was to be seen of any brain proper in the great cavity of the head. The membranes usually covering the cerebrum had disappeared with that organ. At the base of the skull the floors of the ventricles and basal ganglia stood out prominently, and back of these parts, lying on the tentorium, were the only vestiges of a cerebrum—

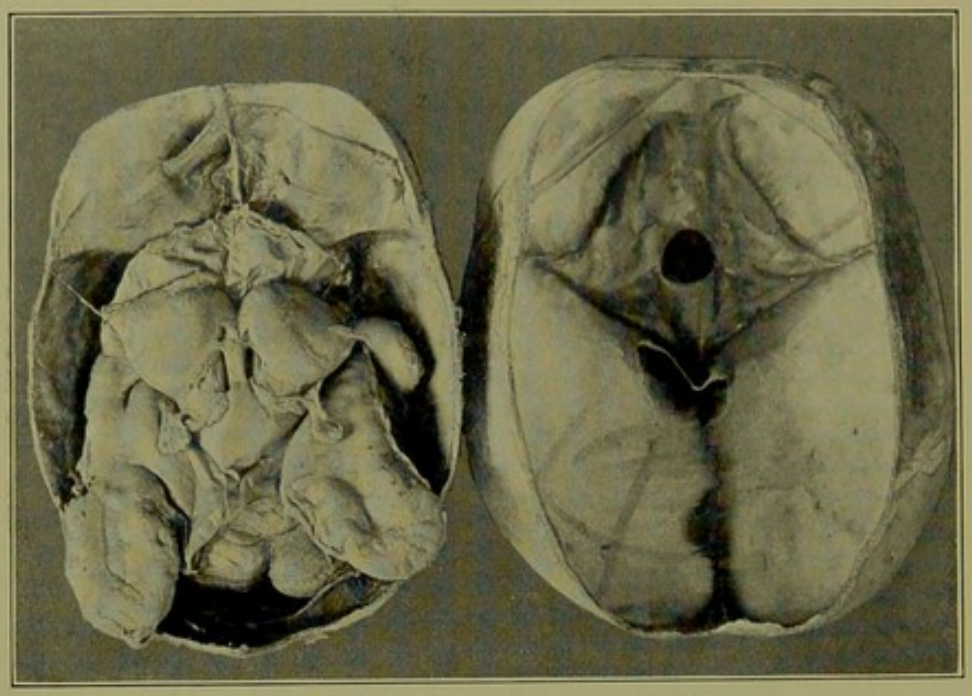


Fig. 305.—Brain and skull in a case of hydrocephalus.

parts of the two occipital lobes. On removing the tentorium, the cerebellum was found to be of about normal size. Microscopical examination showed degeneration and atrophy of the lateral columns of the cord (Fig. 305).

In this case, then, we have to do with distention and atrophy of the encephalon pushed to its greatest extreme.

Case IV, in a series of autopsies by Bourneville, is a good illustration of the nature of the process of compression and atrophy. A girl, a complete idiot, died at the age of about two years. Five hundred grams of fluid were found in the brain-cavity, the brain-envelope having become merely a sac of varying thickness. For instance, in the right hemisphere, over the whole of the temporo-occipital region, the wall of cerebral substance was but a millimeter in thickness, and at one place here, near the fissure of Sylvius, the brain-substance was

absent altogether at a space of four centimeters in diameter, closed merely by a fine meningeal veil. In this case, then, the process of complete atrophy of the brain was arrested by death.

As the ventricular cavities dilate, pushing the brain-envelope with them, the skull-cavity is distended and the cranial bones are separated, made thinner, and expanded in area. The enlargement of the head is directly proportional to the youth of the patient. Cases beginning before or shortly after birth will present greater expansion of the cranial cavity than such as have a later origin. Sometimes some sutures give way and others become synostosed. Where sutures are separated Wormian bones often form, or a membranous connection is established between the cranial bones.

Occasionally, in these cases of primary hydrocephalus, the defects of brain-substance are not due to pressure-atrophy, but there is an associated condition of malformation or defect. Thus, in an autopsy of Bourneville's, on a girl about thirteen years of age, with congenital hydrocephalus, idiocy, and epilepsy, the hemispheres of the cerebellum were totally absent, the cerebellum being represented by the vermis, which was the size of a pigeon's egg. Perhaps such a defect is due to a pressure-atrophy beginning very early in fetal life.

As regards the pathology of secondary hydrocephalus, we possess more definite knowledge. In this the internal hydrocephalus is caused by obstruction of the veins of Galen, or by obliteration of the foramina of Monro, Magendie, or Mierzejewski. Common causes are tumors of the cerebellum, such as sarcomata and tubercles. Meningitis may act in the same way. The amount of hydrocephalus, ventricular dilatation, and expansion of the skull thus induced will depend directly upon the youth of the infant or child. As a rule, secondary hydrocephalus never reaches the extent of the primary form, owing to the rapidly fatal nature of its cause. In these cases we seldom see pressure effects beyond flattening of the convolutions and moderate expansion of the cranial vault.

An exceptional and an extremely interesting case was one upon whom I made an autopsy at Randall's Island, not long ago. It was a case of very marked hydrocephalus in a child of four years, in which a small tumor of the pineal gland, the size of a small hazel-nut, compressed and obliterated the aqueduct of Sylvius. Both of the lateral ventricles were enormously distended, the left more than the right, and contained twenty-four ounces of clear fluid. The third ventricle was also widely dilated. The fourth ventricle was of normal size. Microscopical sections of the quadrigeminal region revealed the obliteration of the aqueduct. The tumor was apparently tubercular, but was not examined, it having been mislaid and lost.

The cases of acute hydrocephalus due to meningitis serosa, and the cases in which a defect of brain-substance is counterbalanced by an equal bulk of cerebrospinal fluid, do not commonly fall under this heading.

In chronic hydrocephalus internus there seems to be a special susceptibility of the membranes to acute disease, so that at autopsy it is not uncommon to find evidence of an acute meningitis, simple, hemorrhagic, suppurative, or tubercular.

The fluid found in hydrocephalic idiots has been frequently analyzed. In a case of Bourneville's the analysis of the hydrocephalic fluid, withdrawn nine hours after death, resulted as follows: Color, pale yellow; aspect, clear after standing; reaction, neutral; odor, like that of blood; consistence, slightly viscous; density, 1.006; organic matter, 1.65; salts, 10; total fixed solids, 11.65; phosphoric acid, 0.22; sodium chlorid, 0.80; albumin, 0.26; leukocytes, very few; red blood-corpuscles, considerable.

In microcephalic idiocy we recognize three distinct classes:

1. Morphological microcephaly, in which there are no pathological changes in the brain, but simply a brain arrested in its development with persistent fetal morphology.

2. Pathological microcephaly, in which the small size of the head is determined by morbid processes in the brain (such as meningeal hemorrhage, thrombosis, porencephalic defects, etc.).

3. Mixed cases of microcephaly, in which pathological processes are superadded to or associated with true morphological microcephaly.

The following table gives a summary of the pathological conditions responsible for most cases of idiocy:

Etiological Factors.	Primary Lesions.	Terminal Conditions Found at Autopsy.
Hereditary degeneracy.	Developmental defects of portions of the brain, such as corpus callosum, one hemisphere or part of a hemisphere.	Same, with compensatory hydrocephalus internus, externus, or both; compensatory thickening of skull.
Hereditary degeneracy.	Micrencephalus, with or without defects.	Same. Brain-substance often sclerotic; deficient in microscopical elements. Sometimes compensatory hydrocephalus.
Hereditary degeneracy.	Agenesis corticalis; slight changes in gross appearance of brain; maldevelopment of microscopical elements.	Same. Sometimes hydrocephalus externus.
Vascular disorders of fetal brain.	Partial defects like porencephalia, microgyria.	Same. Compensatory hydrocephalus and thickening of the skull; atrophy and sclerosis of affected convolutions or lobes.
Diseases of mother or trauma to mother. Fetal disorders, such as syphilis, asphyxia at birth, prolonged labor, infantile convulsions, febrile diseases of child, cerebral diseases of child.	Meningeal hemorrhage; thrombosis; embolism; cerebral hemorrhage; meningitis; meningo-encephalitis.	Atrophy; diffuse sclerosis; cysts; meningo-encephalitis.
Uncertain fetal and postnatal causes.	Tumor sometimes; oftener unknown.	Hydrocephalus.
Antecedent infectious diseases of mother or child (?).	Tuberous sclerosis.	Tuberous sclerosis.

In amaurotic idiocy but six autopsies have been made, and thus far the changes found may be considered to be simply degeneration of the gray matter of the cortex and of the anterior horns of the cord (Sachs).[1]

Diagnosis and Prognosis of Idiocy.—Diagnosis of Idiocy in General.—It is seldom difficult to make a diagnosis of idiocy in childhood when the individual has reached such a stage of development that backwardness and deficiency stand out in prominent contrast to the normal average of intelligence in children of the same age. Occasionally, however, we have to deal with some species of insanity in childhood, in which case the matter of diagnosis is important because of the more favorable outlook for insanity. There are not a few patients cared for in institutions for the feeble-minded and idiots in which insanity has been the original factor in the mental impairment, and when the histories of such are obscure, it is almost impossible to distinguish between ordinary idiocy and what may be truly termed a terminal dementia following upon some acute insanity of childhood. In these cases residual symptoms of a psychosis can be our only guide.

The diagnosis of some form of idiocy in infancy is far from easy unless one familiarizes himself thoroughly with the manifold steps of development for the first few years of existence. Early diagnosis is of the utmost importance, not only for the benefit of the unfortunate child itself, but on account of the deep solicitude of the parents for its future. One of the chief aids in differentiation will be found in a study of the physical condition of the infant. The shape and size of the head should be carefully noted and compared with normal shapes and statistics. Unfortunately, there are no elaborate tables of head measurements in infants and children as yet made which can be looked upon as a final establishment of the normal averages, but the following figures are fairly representative of cranial measurements:

Circumference at birth	36 cm. in both sexes.
Binauricular arc	22 " " " "
Naso-occipital arc	22 " " " "

At the age of one year these dimensions have increased to—

Circumference	44 cm. in both sexes.
Binauricular arc	27 " " " "
Naso-occipital arc	30 " " " "

Malformation and asymmetry of the head should be taken into consideration. The various malformations are treated of in another chapter. The presence of marked anatomical stigmata of degeneration is of significance. Paralysis of a limb or limbs, if of cerebral origin, is of great importance, indicating, as it does, some lesion of the brain, which may retard or restrict mental development and lead to paralytic or epileptic idiocy, or both. Some of the morbid movements, such as nystagmus,

[1] "A Case of Amaurotic Family Idiocy with Autopsy," by Frederick Peterson, M. D., "Jour. Nerv. and Ment. Dis.," July, 1898.

ataxia, chorea, or athetosis, may be present, and, as symptoms of disorder of the central nervous system, should lead to a careful investigation of the whole mental and physical organization.

While it is frequent to find evidence of idiocy immediately after birth in bodily and especially in cranial and facial characteristics, yet after careful examination as to imperfect action of the sensations and perceptions, we may sometimes recognize idiocy in cases where physical evidence is wanting. The child may not learn easily to take the breast. Its cry is different from that of other children. It cries without motive. Sometimes there is congenital blindness or congenital deafness (there is always deafness in every child for several days after birth). In the normal child the sense of smell may be stimulated immediately after birth, and taste is evident in a few days. In the idiot these special senses may be retarded in their development, or absent. The movements of the eyes are generally irregular, and strabismus is frequent until the end of the second month in normal children, so that in the diagnosis of idiocy this can not be relied upon as significant unless the eye-movements are imperfect after the third month. In the normal child the eyes follow a light between the third and fourth weeks; in idiots this ability may be retarded indefinitely. The normal child starts at gentle touches on the third day after birth. The new-born idiot may be immobile or feeble in its reactions to cutaneous stimuli. The normal child laughs at tickling in the eighth week, while the idiot or imbecile is not incited to laughter ordinarily at all in the earliest years of life. From these facts it follows that in defectives we must examine the sensory organs themselves, so far as possible, for defects, as well as study their reactions and impaired perceptions of sensations.

Preyer, in his work on "The Mind of the Child," gives a conspectus of the development of the normal faculties during the first forty months of the child's life, and the following brief abstract is made therefrom for purposes of comparison with the mental development of the idiot:

NORMAL CHILD.

First Month.—Sensitive to *light* as early as first and second days. Pleasure in light of candle and in bright objects on eleventh day. *Hears* on fourth day. Discriminates sounds last two weeks of month. Starts at gentle *touches* second and third days. Sensibility to *taste* about end of first week. Strong-*smelling* substances produce mimetic movements at birth.

Pleasure first days in nursing, in bath, in sight of objects.

Discomfort first days from cold, wet, hunger, tight clothing.

Smiles on twenty-sixth day.

Tears on twenty-third day.

Vowel-sounds in first month.

Memory first active as to taste and smell; then as to touch, sight, hearing.

Incoördinate *movements of the eyes.*

Sleeps two hours at a time, and sixteen hours in twenty-four.

Reflexes active.

Second Month.—Strabismus occasional until end of month. Recognizes human voices; turns head toward sounds. Pleased with music and with human face. Sleeps three, sometimes five or six, hours. Laughs from tickling at eighth week. Clasps with its four fingers at eighth week. First consonants from forty-third to fifty-first days (*am-ma, ta-hu, gö, ara*).

Third Month.—Sixty-first day, cry of joy at sight of mother and father; eyelids not completely raised when child looks up. Accommodates at ninth week. Notes sound of watch at ninth week; listens with attention.

Fourth Month.—Eye-movements perfect. Objects seized are moved toward the eyes. Grasps at objects too distant. Joy at seeing self in mirror. Contraposition of thumb in grasping at fourteenth week. Head held up permanently. Sits up with back supported at fourteenth week. Beginning to imitate.

Fifth Month.—Discriminates strangers. Looks inquiringly. Pleasure in crumpling and tearing newspapers, pulling hair, ringing a bell. Sleeps ten to eleven hours without food. Desire shown by stretching out arms. Seizes and carries objects to mouth. Consonants *l* and *k*.

Sixth Month.—Raises self to sitting posture. Laughs, and raises and drops arms when pleasure is great. "Crows" with pleasure. Compares image of father in mirror with original.

Seventh Month.—Astonishment shown by open mouth and eyes. Recognizes nurse after four weeks' absence. Sighs. Imitates movements of head, of pursing lips. Averts head as sign of refusal. Places himself upright on lap.

Eighth Month.—Astonishment at new sounds and sights; at imitations of cries of animals.

Ninth Month.—Stands on feet without support. More interest shown in things in general. Strikes hands together with joy. Shuts eyes and turns head away when something disagreeable is to be endured. Fear of dog. Turns over when laid face downward. Turns head to light when asked where it is. Questions understood before child can speak. Voice more modulated.

Tenth Month.—Sits up without support in bath and carriage. First attempts at walking at forty-first week. Beckoning imitated. Missed parents in absence, also a single ninepin of a set. Can not repeat a syllable heard. Monologue and hints at imitation (*mä, pappa, tatta, appapa, baba, tätä, pa, rrrr rrra*).

Eleventh Month.—Screaming quieted by "sh." Sitting becomes habit for life. Stands without support. Stamps. Syllable correctly repeated. Whispering begins. Consonants *b, p, t, d, m, n, r, l, g, k*, vowel *a* most used, *u* and *o* rare, *i* very rare.

Twelfth Month.—Pushes chair. Can not raise self or walk without help. Obeys command, "Give the hand."

Thirteenth Month.—Creeps. Shakes head in denial. Says *papa* and *mamma*. Understands some words spoken.

Fourteenth Month.—Can not walk without support. Raises himself by chair. Imitates coughing and swinging of arms.

Fifteenth Month.—Walks without support. Laughs, smiles, gives a kiss on request. Repeats syllables. Understands ten words.

Sixteenth Month.—Runs alone. Falls rarely.

Seventeenth, Eighteenth, and Nineteenth Months.—Sleeps ten hours at a time. Associates words with objects and movements. Blows horn, strikes with hand or foot, gives leaves to stag, waters flowers, puts stick of wood in stove, washes hands, combs and brushes hair, and other imitative movements.

Twentieth to Twenty-fourth Month.—Marks with pencil on paper, whispers in reading newspaper. Very few expressions of his are recognizable. Executes orders with surprising accuracy. Tries to sing and beat time, and dance to music.

Twenty-fifth to Thirtieth Month.—Distinguishes colors correctly. Sentences of several words. Begins to climb and jump and to ask questions.

Thirtieth to Fortieth Month.—Goes upstairs without help. Sentences correctly applied. Clauses formed. Words distinctly spoken, but influence of dialect appears. Questioning repeated to weariness. Approximates manner of speech to that of family more and more.

By contrasting the mental development of the supposedly abnormal child with these observations of Preyer upon normal development, it will not be difficult to appreciate impairment of varying degree. The presence of mere backwardness may not infrequently, however, be observed in children that later develop normally, and it is well to bear this fact in mind; but the combination of backwardness in the development of the sensations, perceptions, ideation, and speech with marked physical signs of degeneracy or brain lesion would be naturally of the greatest importance from the diagnostic point of view.

Diagnosis of the Form and Nature of the Idiocy.—While the diagnosis of the presence of idiocy is, as a rule, fairly easy, especially after infancy has reached the stage of childhood, the diagnosis of the type or kind of idiocy presented is often attended with great difficulty. Where the cerebral disorder or defect is accompanied by striking physical peculiarities or malformations, such as hydrocephalus, microcephaly, paralysis, or myxedema, we are immediately in a position to classify the type. In idiocy associated with epilepsy, too, we can readily approximate the type, though it must always be remembered that there are three distinctive ways in which epilepsy and idiocy are correlated—viz., paralytic idiocy combined with epilepsy, epileptic idiocy from a homologous lesion not implicating the motor centers or tracts, and, finally, dementia in childhood depending upon the epilepsy. The traumatic class of cases is recognized either by the external evidence of injury to the skull or by the history of direct relation of the psychic symptoms to the antecedent trauma. The sensorial type of idiocy is distinguished by existing or foregone loss of two or more senses, particularly blindness and deafness. The amaurotic type presents a characteristic syndrome—viz., flaccid or spastic weakness or paralysis of the

whole musculature, diminished or exaggerated tendon-reflexes, distinctive changes in the fundus leading to optic atrophy, and marasmus. In the majority of cases, then, we are in a position to determine readily the form of idiocy presented by the patient and to formulate an opinion as to the nature of the pathological process or the condition underlying it; but there will still remain a considerable number of cases in which diagnosis can not be made during life, either as to the type of idiocy before us or as to the character of the process. Among such puzzling cases will be those indistinguishable from the psychoses of early life; idiocy following meningeal hemorrhage and meningitis without inducing either paralysis or epilepsy; idiocy due to tuberous sclerosis, and the like.

Diagnosis of the Degree of Idiocy.—It is necessary, for purposes of medicopedagogical treatment, to comprehend the degree of idiocy, not only to determine whether it is simple idiocy, imbecility, or feeble-mindedness, but to ascertain, as far as possible, the different shades of each of these; and it is useful, too, to watch the progress of a case under treatment, and to record from time to time the advance made by the patient and pupil. Accordingly, the writer has drawn up what may be termed a species of mind chart, as given opposite. The physician will be familiar with the ordinary tests for common and special sensibilities. The intensity and duration of attention may be studied, in the same connection, by methods which will readily suggest themselves in relation to objects, colors, sounds, smells, and tastes, which are utilized in such a way as to demonstrate perception, the retention of the perception, and the duration of such retention. The chief difficulty will be in determining and recording the purely intellectual features of the case; but some patience and perseverance will demonstrate the ability and degree of ability of the patient to acquire, conserve, associate, and produce ideas, concrete and abstract; to appreciate resemblances and differences; to count, add, subtract, and divide.

Prognosis.—As regards the cure of idiocy, there can not be any difference of opinion. There are few cases—indeed, almost no case—in which improvement to some degree may not be promised under proper conditions; but cure there is none. The profound idiot may be regenerated to some slight degree; be made less repulsive, less offensive, less destructive. The imbecile can be taught cleanliness, speech, divers occupations. The feeble-minded subject is susceptible of enormous improvement. It is impossible in any case to predict how much advance may be made under the best supervision, but it will be safe to say that the methods now in vogue in the training of the idiot will surprise the relatives or guardians by their efficacy, and there is no case so unpromising and hopeless as to contraindicate an attempt at improvement. Left to itself, even a mild type of idiocy will not only make no progress, but will be certain to degenerate, to lapse into a lower grade. Shuttleworth,[1] in reviewing the results of twenty years' experience at one of the large English institutions, states that of patients discharged

[1] Tuke's "Dictionary of Psych. Med.," p. 675.

MIND CHART.

Name..... Age..... Sex.....

Constitution (feeble, fair, robust, or obese).....

Form of idiocy..... Degree of idiocy.....

Paralysis, deformity, or morbid movements.....

Right- or left-handed..... Temperament (cheerful, gloomy, restless, sluggish, etc.).....

Sense defects.	Sight.	Hearing.	Taste.	Smell.	Tactile and pain.	Muscular.	Thermic.
Intensity and duration of attention.							
Instincts.	Hunger.	Self-preservation.	Sleep.	Voluntary movements; play.	Sexual.	Imitation.	
Morals and Habits.	Tidiness.	Destructiveness.	Humanity.	Veracity.	Politeness.	Obedience.	
Sentiments.	Pleasure and pain.	Affection.	Fear.	Anger.	Acquisitiveness.	Shame.	Curiosity and astonishment.
Language.	Speech.	Reading.	Writing.	Gesture.	Drawing.		
Intellect.	Ideas.	Memory.	Association of ideas.	Reason.	Judgment.	Will.	Arithmetic.

Special aptitudes.....

therefrom after full training, 10 per cent. became self-supporting, another 10 per cent. might have become so had they obtained suitable situations, and about 20 per cent. were reported as useful to their friends at home. This bears out the earlier estimate of Seguin, who said that "more than 40 per cent. have become capable of the ordinary transactions of life under friendly control, of understanding moral and social abstractions, of working like two-thirds of a man; and 25 to 30 per cent. come nearer and nearer the standard of manhood, until some of them will defy the scrutiny of good judges, when compared with ordinary young men and women."

There are certain features in connection with the different types of idiocy which are helpful in forming our opinion as to the probable future of a patient. For instance, it may be taken as an axiom that the greater the defect or injury of the brain, the profounder will be the mental impairment and the more difficult will be the labor of bringing about an amelioration of the condition. The earlier, too, that the brain is hampered in its development, the worse, as a rule, is the prognosis. This holds good for every form of idiocy. Hence the outlook for the congenital types is less promising than that for the acquired, and for idiocy acquired in the first year less than that for idiocy acquired in the second. Some of the prognostic indications of the special forms will be discussed under their respective captions; but, in general, it may be assumed that microcephalic idiocy and congenital hydrocephalic and paralytic idiocy will be benefited least among the types of idiocy discussed, and always in proportion to the intensity of the morbid process. The sensorial, traumatic, and myxedematous forms are, *ceteris paribus*, among the most promising. The amaurotic form is generally fatal. Idiots with special aptitudes, or *idiots savants*, tend to early psychic degeneration. Idiots that are extremely restless, as shown by incessant motion of the hands, arms, head, trunk, or by constant walking, are generally among the most intractable, because of the difficulty of fixing their attention.

Although there is scarcely ever to be encountered an idiot in whom improvement of some kind can not be brought about by assiduous cultivation of whatever residual faculties and functions he possesses, it is practically necessary to classify idiots into teachable and unteachable. It is practically so because a majority of these defectives are found among the poor, who can not command all that the world affords in the way of treatment, care, and training. Nor could the commonwealth assume the enormous task of doing the best for all its idiot charges. No community could possibly be repaid for any such undertaking, because the idiots classified by public authorities as unteachable are not susceptible of such development as would satisfy the tax-payers' right to ask the utility of the expenditure. It is only with private families that anxious parental solicitude will and can demand that medicopedagogical care, skill, and patience which can surmount almost insuperable difficulties in the education of profound idiots. Practically, therefore, we find that there is a tendency to separate idiots into the teachable and unteachable; a tendency in our public institutions to exclude un-

promising cases, such as epileptic and paralytic idiots, idiots with malformations, marked cases of hydrocephalus and microcephaly, and, indeed, any patient requiring that particular and assiduous care which it is not in the power of the commonwealth to give.

The prognosis as regards life depends directly upon the degree of injury to or defect of the brain. In general, idiots are short-lived. Diplegic and paraplegic idiots seldom attain the age of twenty years; hemiplegic idiots may live much longer, though it is infrequent for them to attain the age of forty and more years; hydrocephalics perish still earlier. The same is true of profound cases of microcephalic and myxedematous idiocy. The rare form known as amaurotic idiocy is almost invariably fatal in infancy.

General Treatment of Idiocy.—The treatment of the idiot involves the employment of both physician and teacher. The adjective medicopedagogic is made use of to designate this combination of medical and educational features for the care of the defective classes. In the union of the two professions for such purpose the educator occupies relatively the higher and more important position. The inestimable services of trained care-takers or nurses are not to be overlooked. That patient will profit most who receives the properly combined aid of the best physician, best teacher, and best nurse. As a rule, this fortunate concurrence of necessary aids is more apt to be found in the public or private institution than in the home; but that it is possible to carry on treatment at home under favorable circumstances, is not to be gainsaid.

The methods of procedure formulated by Itard, expanded by Seguin, and employed now-a-days everywhere in private and public institutions for idiots, with modifications induced by experience and the progress of educational science, are well described in the writings of Bourneville, Shuttleworth, Ireland, Down, and others. A brief résumé is given below of the process of

Education of Idiots.—The educational treatment should begin as soon as the diagnosis of defective intelligence is made. It need not be pushed vigorously at too early an age; but infancy, when the nervous system is most impressionable, plastic, and pliable, is the time for easy modification and the bringing out of the rudimentary psychic processes which are the foundations for the later conduct, habits, intelligence, and speech. Patients are admitted to the Bicêtre and Salpêtrière at the age of two years and over.

In order to understand the methods of pedagogic treatment of idiocy, let us imagine an infant brought before us afflicted with a profound degree of idiocy—*i. e.*, one showing little or no attention, unable to walk, to use its hands or to speak, and uncleanly in habits. In undertaking a case of this kind the process of education is pursued with the following distinct purposes in view:

1. To develop the attention and sharpen the five senses.
2. To develop coördinated movements and strengthen the muscles.
   - (*a*) To teach to walk.
   - (*b*) To teach use of the hands.
3. To inculcate habits of cleanliness in person and dress.

4. To teach the patient the use of language.
5. To arouse the intellect by inculcating ideas of length, weight, surface, solids, form, number.
6. Finally, to carry the education higher, by means of studies in natural history and all sorts of manual and industrial and moral training.

Naturally, some of these purposes are attained at the same time to a considerable degree by some one process employed in education. Thus, when a light bean-bag is thrown at the face of our patient, the attention and sensibility may be so feeble that it is not noticed at first. By frequent repetition attention is developed, sensibility becomes more acute, a reflex movement to ward off the missile is aroused, and gradually, by successive stages, the patient learns to catch the bag, to throw it back, and, finally, to go through a simple drill with it, accompanied by music. This single experiment then improves the attention and several of the senses, and aids in developing coördination and strength of the muscles.

Attention.—The degree of attention is, in the idiot, an indication of the degree of idiocy. To a certain extent the degree of attention noted is of value in prognosis; for, if the attention can not be aroused at all, no progress in education can be made. Thus the first step in our process of education must be the employment of methods of exciting attention. The most useful are such as appeal to cutaneous sensibility, to the eye, and to the ear. But even if these are in abeyance, the other senses afford useful avenues of approach to the nervous centers. Pricking, tickling, light blows, hot and cold articles, etc., may be used to attract attention through the skin. Colored balls, brilliant pieces of cloth, a ray of light in a dark room, the magic lantern, or a spectrum—such things may be variously and patiently experimented with to fix the attention of the eye. A loud call, a bell, music, a gong, or even a pistol shot sometimes, are devices for exciting the attention of the ear. Not infrequently months of patient experiment must be traversed before we are rewarded for our labors.

Education of the Sense of Touch.—The methods in vogue for developing the sense of touch generally aid at the same time the coördination of muscular movements; hence in actual practice the education of the hand and touch and also of the eye proceed more or less simultaneously.

The idea of temperature is developed by plunging the hand into cold, tepid, or warm water, or by the application of bottles containing water at different temperatures.

The sense of smoothness or roughness of surface is inculcated by passing the finger-tips over a board, one-half of which is covered with velvet, the other half roughened like a grater. Pieces of stuff of varying degrees of roughness or smoothness are also made use of. The softness and hardness of objects are taught by the handling of different objects, such as hard balls or cushions.

The child is taught to button by means of two bands of cloth, one with large buttons and the other with large button-holes; to lace up a shoe, by means of a shoe with eyelets a centimeter in diameter, and

alternately hemmed with red and blue leather; to tie knots, with the aid of a pad upon which are spread strings of divers colors.

Stringing beads and buttons, sticking pins into a pincushion covered with dotted stuff, and the use of the size-board and form-board are useful means of developing tactile sense, educating the eye, and bringing out some of the faculty of calculation.

The Education of the Eye.—After the physician has remedied any existing visual defects, it becomes the duty of the instructor to interest the restless and inattentive eye. As already mentioned, the attention is aroused by glittering and striking objects, and, once the gaze is captured, the latent sense may be drawn out by many devices familiar to the kindergartner and teacher. Particolored balls, variegated shapes and colors of blocks, spheres, squares, cubes, illuminated pictures, gaudy stuffs, the spectrum, the kaleidoscope—all of these play a rôle in the education of the vision of the defective pupil. The matching of ribbons, wools, or cards, and the discrimination of forms of blocks, are methods of aiding the higher development of the visual sense. The size- and form-boards already alluded to, and the use of graduated rods to be placed by the pupil in step-like rows, are excellent adjuncts. Later on come into play various games,—dominoes, ball, croquet, marbles, bean-bag, hoops, tennis, skipping, battledore and shuttlecock, quoits, golf, and the like,—in the employment of all of which not only is the vision stimulated and improved, but there is a gain in manual dexterity, and an associated development of some of the psychic functions. The teacher acquires a special tact in leading the pupil to concentrate his mind upon what is being done, and in making use of the instinct of imitation, so that the child endeavors to do as the other pupils are doing or to follow the movements of the instructor.

Education of the Sense of Hearing.—After the physician has made sure that defective hearing is due rather to want of attention than to any of the many causes of deafness, the teacher experiments upon the sense with sounds of various kinds—gongs, bells, speech, instrumental music, and songs—and by some one of these means the ear will at last be reached and kept open until it becomes an avenue for impressions from the environment to travel to the brain for registration and the rousing of new cerebral activities. This organ in the defective is often especially alive to the influences of melody and harmony, to songs and jingles and rimes. Music is an efficient aid in the various drills and games made use of later on in the child's mental development.

Education of the Taste and Smell.—While these senses have not the importance of the three just described, it is still useful to stimulate and develop them as far as possible. The child can be taught to discriminate between the simple taste sensations—salt, sweet, bitter, and sour—by means of solutions of salt, sugar, quinin, and citric acid, and between odors that are noisome and odors that are pleasant by means of tinctures of asafetida, cloves, and musk, and divers perfumes. Later, he learns to distinguish flavors, and to associate what is good and useful with pleasant, and what is hurtful with noxious tastes and smells.

Teaching to Walk.—A course of light massage of the lower extremities, together with exercise of the joints in flexion and extension, is undertaken for the purpose of developing suppleness and strength and improving the nutrition. The child is then regularly placed in a swing constructed for the purpose, with a vertical board in front in such a position as to receive the advancing feet of the child as it moves to and fro. The impact of the feet upon the board, with the backward swing caused thereby, in the course of time gives the child a sort of pleasure, and awakes in it a sense of the dependence of its movement upon the varying pressure and impact of its feet. It is not long before the child is enabled to use its legs with considerable ease and skill in the exercise. Having attained this stage, the child is now frequently held upright on its feet and then placed between the parallel bars sustained by its arms, in which position it is induced to make efforts at walking, at first for a few minutes, but with gradual increase of the time of stay each day. Then the pupil becomes quickly ready for a wheel-chair, which is merely a modification of the principle of the parallel bars, the supports being on wheels, so that as the child walks it moves the apparatus about with it. Later on it is taught to mount and descend a stair by means of a short, stationary step-ladder. After this the gait is rapidly improved by a variety of exercises, drills, simple dances, and the like.

Education of the Hands.—Even though the motions of the hands be incoördinate and without force, though the infant may be unable to do anything for itself, even to grasp an object or to oppose the thumb to the fingers, there are many methods of overcoming such defects and developing the normal power and usefulness of the hands. Among these is the employment of the parallel swinging-ladders and rings. At first the child's hands are applied to the rounds and held there by the teacher during the execution of such movements as standing, sitting down, raising the arms high above the head, and bending forward and backward, swinging to and fro, and so on.

As the pupil makes progress, the drill is carried on with great regularity and precision, accompanied by spoken commands and often with music. In this way not only are the muscles strengthened and coördinated and the use of the hands and feet perfected, but a familiarity with certain words and ideas and their association is created.

The use of blocks in building up various structures, with the subsequent pleasure of tumbling them down again, is as useful to these defectives as to normal infants.

Finger-exercises with the peg-board, or by means of picture-perforating, as practised in the kindergarten, may come into play for the development of the finger movements of the hand. Some of the apparatus employed in educating the sense of touch are equally valuable for training the accurate movements of the hands.

Teaching Habits of Cleanliness in Person and Dress.—Idiots of every degree are slovenly, awkward, negligent, unless taught and supervised, and the lower grades are incompetent to use spoon, knife, or fork, unable to care for themselves in any way, and continually drooling, sucking their fingers, holding the mouth open, and wetting and soiling

themselves. It is of paramount importance, then, in their education to make every effort to overcome these deficiencies.

Such children as are unable or just learning to walk are placed by day in especially constructed chairs, and by night in especially prepared beds, for purposes of cleanliness, and must be watched and raised at certain hours by the nurses. It is surprising how many will, by assiduous attention, soon learn to give some signal to the care-takers of their needs, and in the end acquire control over themselves in this regard. They learn to expect the regular bath, and those who progress further become systematic in ablutions, cleansing the teeth, and all the little matters pertaining to the toilet. At the table they are taught first the use of the spoon, then of the fork, and lastly of the knife. They learn to dress themselves and to make themselves neat and tidy, and ultimately to brush and arrange their clothing, blacken their shoes, make their beds, etc. All of this instruction requires time and the utmost perseverance and patience on the part of the attendants. By it we also train the hands, the senses, and the intellect.

To close the mouth and prevent drooling, faradic electrization of the orbicularis oris is employed, and the insertion of a flat piece of wood or a stick of licorice-root in the mouth is useful. The teeth need careful looking over by a dentist from time to time, and daily cleansing. Sucking of the fingers and biting of the nails can be overcome by application of aloes and other bitter or disagreeable substances.

The Teaching of Language.—In idiots we must begin our inculcation of the uses of language according to the laws of its evolution in the normal child, first, however, correcting such defects in the ear, mouth, or vocal apparatus as are amenable to medical or surgical treatment. A child first develops its auditory word-center and then the motor speech-center. These two centers, with an association tract, are the primitive basis of language in the child. Often, in defective children, a course of gymnastic exercises of the lips, tongue, and jaw will be a necessary adjunct to the instruction, and in cases of deafness the lip-imitation method of education will require to be used.

In developing the motor speech-center the child begins by repeating the simplest linguals and labials, such as "dadda," "tatta," "mamma," "papa," and "babba," and these first consonants should be employed in the construction of the new words to be learned.

Music is an excellent auxiliary in teaching the articulation and use of words, and Shuttleworth recommends Elliott's "National Nursery Rimes," set to pleasing melodies, as particularly adapted for the purpose. The interest of the pupil is often best secured and sustained by the employment of objective illustrations. The naming of subjects of pictures, of persons and things about the room, of parts of the body, and the imitation of cries of animals, are means of arousing interest.

After developing the word-hearing and the motor speech centers, the visual and writing centers will require education, and the methods in vogue are analogous to those of the kindergarten. Bourneville

recommends the use, first, of black letters twelve centimeters high; then an alphabet with the consonants in black and the vowels in red, the letters six centimeters in height; then letters of ordinary size; and, finally, the repetition, in chorus, of letters and words placed before a class. This collective exercise, in which imitation plays a great part, contributes markedly to the development of speech. Figures are employed in much the same manner, and counting is learned from some of the various apparatus already described, as well as from simpler and more interesting devices, such as the use of the fingers, shells, marbles, buttons, beads, and the abacus. The nursery game of keeping shop is especially useful for developing the ideas of number, weights, and values.

Writing and drawing are taught by means of sand-boxes, blackboard exercises, and, finally, drawing-books. The knowledge of form is best inculcated by modeling in clay, and by reproductions in clay or wood of surface drawings.

From these primary lessons it is but a step to

Manual and Industrial Training.—When the pupil has reached a certain stage of mental development, every effort is made to further the training to such an extent as to subserve the demands of health and utility. Methods of manual and industrial education are best furthered in institutions in which every variety of occupation commensurate with the individual needs and tastes of the pupils can be satisfactorily carried out. In most existing institutions it is true that the ideal system of care and development of defectives has not yet been attained, but the tendencies of the present time are in the right direction. The institutions of the future for all classes of dependents, for idiots, for the insane, and for the inmates of prisons and reformatories, will doubtless be modeled on the colony plan. They will be village settlements or communities wherein the chief industries will be such as relate to the housing, clothing, feeding, etc., of their inhabitants, thus bringing into existence all of the occupations which tend to utility and economical administration. The scheme is well exemplified and successfully demonstrated by the evolution of the Craig Colony for Epileptics at Sonyea, N. Y. Were I called upon to draw up an outline of a plan for a colony for idiots, it would be somewhat as follows:

1. In the first place, there should be an abundance of land, at least an acre for each inhabitant. The site should be selected with due regard to fertility of soil; for agriculture, stock-raising, and gardening should afford employment for the majority of the pupils.

2. Convenience of access to managers and patients and their friends is a desideratum.

3. In the construction and arrangement of buildings the country-village idea should never be lost sight of, and the farmstead group—the cottages, villas, schools, shops, and so on—should be simple, independent, homelike, and surrounded by their own little gardens, hedges, etc., in conformity with such design.

4. So far as possible, each house should constitute a home circle, the number of members being limited to ten or fifteen.

5. An administration building, a small hospital for the sick, special villas for the infirm, bed-ridden, ineducable, and disturbed classes, a gymnasium, a library, a museum, and swimming- and rain-bath, are among the separate structures required in addition to those already mentioned.

6. The educational features of the colony will be carried on in ordinary schools, Sloyd schools, trade schools, and so on, and everything that may contribute to the furtherance of mental development should be encouraged. Thus the field study of natural history is one of the most satisfactory means of arousing the intelligence, interest, and activity of the pupils. Trees, garden produce, and flowers should be labeled with their names, botanical and zoölogical gardens should be established, and the collection of rocks, leaves, plants, insects, birds, etc., made a part of the system.

7. In developing the industries of the colony, such should first be instituted as will serve economical purposes. The aim should be to produce most of the foodstuffs required, to carry on domestic work, to make and mend the wearing apparel, to accomplish ordinary repairs, to construct new buildings, and to fashion the furniture.

8. The whole scheme requires to be under medical supervision, and the scientific aspects of the community thus created should be kept continually in mind. This necessitates the establishment of psychological and pathological laboratories after the most approved style.

As an instance of what species of work may be done by defectives in institutions, Bourneville's statistics of occupations at Bicêtre for 1897 show that there were 187 children employed in the various shops and workrooms, among them being: 10 brushmakers, 24 carpenters, 9 printers, 14 locksmiths, 51 tailors, 28 shoemakers, and 14 straw- and cane-workers. The hemiplegics work exclusively at sewing, and the blind with straw and cane. The colony plan, however, would insure a greater amount of healthier work out of doors than is possible at such a place as Bicêtre, and would be more remunerative to the administration.

Moral Training and Discipline.—Much as the inculcation of moral ideas is needed for normal children, defectives require even more attention in this respect; for in them the abrogation of higher intelligence is associated naturally with feeble inhibitive power. Thus they easily give way to the lower instincts, and are prone to acquire vicious habits of conduct and speech. In some cases the moral obliquity is so great that it constitutes the so-called moral imbecility, and little can be accomplished for their improvement. But the majority of defectives are susceptible to the influences of a good environment and moral discipline. Imitation of the teacher and of playmates and schoolmates counts for much with them. The judicious instructor and care-taker can, by firm and kindly guidance, accomplish great good in this respect, and it should always be kindly guidance, never coercion. There is, however, merit in the employment of a system of rewards and punishments adapted to the idiosyncrasies of the different pupils. A few words of encouragement or praise, or trifling compensations in the way of extra allowances of food, delicacies, recreations, or small wages, appeal dis-

tinctly to some; while words of disapproval, the curtailing of things pleasant to the palate, the deprivation of some anticipated pleasure, and so on, have especial influence with others. It is a good plan to distinguish the pupils for meritorious conduct and industrial accomplishments by distinctive dress, thus appealing to their ambitions. It is well to establish three or four grades to be thus distinctively recognized, for nothing is more human than the instinct to appear well to others, to be among the best-dressed. The instinctive desire of the savage for ornament is no stronger than that of the most civilized being for good clothes. The mentally feeble are no strangers to this feeling, and their good conduct can be enhanced and maintained by promotion to a better clothed division, and their shortcomings well punished by reduction to a lower rank. Corporal punishment is both necessary and useful in extreme cases with vicious tendencies, but should be a last resort even here.

By the means just described, and by other devices that will suggest themselves to the wise and tactful person whom we suppose to be intrusted with their care, these unfortunates may be taught obedience, perseverance, responsibility, and regard for the rights of others, and be imbued with some knowledge of the great laws of justice, beauty, goodness, and religion which rule the ideal world of humankind.

Physical Culture.—The tendency to incorrectness of gesture and bearing, the great lack of strength and grace, among idiots, must be overcome by systematic education of the muscles. There should be courses of gymnastic exercises and drills, with song and instrumental accompaniments. The drills may be made with wands, light dumbbells, etc. Military drill is excellent for both girls and boys. Dancing is beneficial to both mind and body. Bourneville has introduced fencing at Bicêtre, but does not speak of it with enthusiasm.

The Medical Treatment of Idiots.—The medical and surgical treatment of the different forms of idiocy is thoroughly discussed under their several chapters in this book, and it is intended here to refer only to the treatment of certain general conditions met with in all classes and grades of idiocy. Among such conditions are some that relate to hygiene, and others that pertain to bad habits, general diseases, and the like.

Hydrotherapy.—The rain-bath is nowadays considered a necessary adjunct to all public institutions, because of expedition in its use and perfect cleanliness. Such baths should be the daily morning rule of defectives. The skin is kept in a hygienic state, the circulation is stimulated, and general nutrition is improved by the morning bath. In lethargic or apathetic states the cold spinal douche is beneficial, while in very restless patients the prolonged warm bath and wet-packs at night often materially aid in overcoming the condition.

Clothing.—One of the noteworthy stigmata of degeneration common to all classes of idiocy is a diminished resistance to external influences and diseases. They catch cold easily. Tuberculosis and other lung disorders account for nearly seventy-five per cent. of the mortality among them. Diarrheas are common. Hence it is important that, among other things, considerable attention should be given to clothing. Woolen undergarments of warm and light texture should be the rule. The

outer clothing should be light, durable, neat, of prevailing cuts and styles, and none of the clothing should in any way impede or restrict the free motions of the limbs and trunk.

Food.—The dietary for this class of defectives should, in my opinion, closely approximate that of epileptics—*i. e.*, it should be chiefly vegetable, with the free use of milk and eggs, and meat but once daily. Simplicity of food and simple cooking are essential. The dietary need not be so elaborate as, for instance, in hospitals or asylums, where acute disorders are commonly treated, and where the percentage of cure is expected to be large. Idiots are apt to overeat, and hence the chief requisite is to regulate the *per capita* allowance to just the amount necessary to maintain a robust state of physical health. Overeating is probably responsible for much of the diarrhea commonly observed among these cases.

General Bodily Health.—Very common is a condition of general debility, which must be met by appropriate tonics, nutritive foods, special baths, massage, and regular exercise. The great mortality from tuberculosis should lead the physician to a regular examination of the viscera for symptoms of that disorder. When discovered, the usual precautions should be taken to isolate the patient and to build up the constitution in every way. Parasitic and nervous skin diseases will often need attention. The prevailing mucous diarrheas are treated by the usual remedies and by careful regulation of the kind and amount of food. Owing to feebleness of constitution and diminished resistance to diseases, especial danger attaches to acute infectious fevers in idiots.

Masturbation.—The prevalence of this pernicious habit among all classes of idiots is only too pronounced. In the lowest grades it is uncommon, but among the imbeciles and feeble-minded it is one of the most intractable of conditions. There are few agents and devices which have not been tried, and usually vainly, to prevent the practice. It is only rarely that vesication of the genitals, punishment, mechanical restraint of the limbs, and sedative drugs have any effect in the treatment of defectives. Indeed, they might usually as well be left untried. There have been very few experiments of the method of cure by castration, for, naturally, professional opinion is too conservative to undertake, without long and careful deliberation, so radical a remedy. I know of but one institution where castration has been apparently adopted as a part of the regular system of care and treatment. The superintendent of the Winfield, Kansas, Asylum for Idiots has had between twenty and thirty boys who were inveterate masturbators subjected to castration, with excellent results. Not only were their vicious habits put an end to, but there was marked physical improvement in all, and great mental improvement in most, of them. There would seem to be no reasonable objection to operative procedure in such cases, though, perhaps, it is hardly necessary to go so far as castration. Ligature of the vas deferens, or possibly section of some branch of the pudic nerve, might serve as well. At any rate, some method of this kind is well worthy of consideration, though the ultimate decision of the profession as to its utility and propriety has yet to be learned.

INDEX.