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MANUAL
OF
PSYCHIATRY

BY

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THIRD AMERICAN FROM THE THIRD FRENCH EDITION. REVISED AND ENLARGED

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PREFACE TO THIRD EDITION.

SINCE the time of the appearance of the second edition of this MANUAL much progress has been made in psychiatry. In the preparation of the present edition an endeavor has been made to introduce the more important recent contributions. An exhaustive treatment of the newer views has not been attempted, as being beyond the scope of this book; but even the mere presentation of them with references to original sources has resulted in an increase in the size of the volume by about eighty pages.

The author has added sections on disorders of writing; criteria of prognosis in dementia præcox; chronic mania; and acute mental attacks in the feeble-minded.

The editor has added sections on race psychopathology; the relation of the Mendelian laws to heredity in insanity; psychotherapy; the constitutional make-ups which determine a special proneness toward dementia præcox and manic-depressive insanity, respectively; new chemical tests for the cerebro-spinal fluid; the pathogenesis of general paresis in the light of recent serological investigations; the kinship between involution melancholia and manic-depressive insanity; the influence of parental alcoholism upon offspring; a measuring scale of intelligence devised by Binet and Simon, etc.

Further, the editor has rewritten and augmented the chapter on organic cerebral affections, devoting special

sections to descriptions of brain abscess, central neuritis, traumatic psychoses, and cerebral arteriosclerosis.

The editor has also added a chapter on the prevention of insanity and hygiene of the mind.

The Wassermann reaction has become an important aid, in many cases an indispensable one, in psychiatric diagnosis. The editor has therefore been led to give a description of it in an appendix at the end of the book. The technique described is according to the method of Noguchi, which has been selected owing to its simplicity and comparative freedom from sources of error.

These and all other additions throughout the book which have been made by the editor are enclosed in brackets.

Some illustrations have also been introduced.

The editor acknowledges gratefully his indebtedness to Dr. August Hoch for assistance in the preparation of this revision and for many valuable suggestions.

A. J. ROSANOFF.

KINGS PARK, N. Y., May, 1911.

PREFACE TO SECOND EDITION.

THE first edition of this book having become exhausted, an opportunity was afforded to make many changes. The entire text has been thoroughly revised; all the author's additions in the second French edition have been introduced; the translator has added notes on psychotherapy, after-care of the insane, Adolf Meyer's theory of dementia præcox, the technique of lumbar puncture, and a number of other notes, all of which are enclosed in brackets.

Kraepelin's classification is now very generally used in hospitals for the insane throughout the country. That is to say, those whose work it is to study and treat insanity have found this classification more useful than any other.

The translator wishes to acknowledge his indebtedness to Dr. Joseph Collins, the editor of the first edition, whose suggestions have been followed in this edition.

A. J. ROSANOFF.

KINGS PARK, N. Y., July, 1908.

FROM THE PREFACE TO THE FIRST EDITION.

The new classification of mental diseases introduced by Kraepelin has met with much opposition from the medical profession in general, although a great many alienists have adopted it. Since this classification is based upon no firmer foundation than the empirical one of clinical observation, it cannot be doubted that from a strictly pathological standpoint some of the groups are quite heterogeneous, and that ultimately further subdivisions, changes in the grouping, and additions will be necessary. But to the practical alienist the advantage of Kraepelin's classification over the older ones is very considerable. By a careful examination of the history and of the physical and mental status the alienist is now able in the majority of instances to assign his case to one or another of the great groups and thus to determine the prognosis with a greater degree of certainty and accuracy than was possible formerly. This constitutes the chief advance of the Kraepelin school; and it is the result, not merely of the changes in the nomenclature, but of an essential departure in the methods of taking the mental status and in the interpretation of the manifestations of the diseased mind.

The translator has tried to follow closely the text of the French original. Several slight changes have, however, been found necessary.

The French insanity law has been omitted. The specimens of insane utterances showing *incoherence* and *flight of ideas* have been obtained from the clinical records of cases at the Kings Park State Hospital, as it was found impossible to make a satisfactory translation of the French specimens.

The translator's notes throughout the book are enclosed in brackets.

A. J. ROSANOFF.

KINGS PARK, N. Y., January, 1905.

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INTRODUCTION.

PSYCHIATRY is that branch of neurology which treats of mental disorders and of the organic changes associated with them.

Mental disorders arrange themselves in two fundamental categories, characterized respectively by *insufficiency* and *perversion* of the intellectual or moral faculties.

Insufficiency may be either *congenital* or *acquired.* In the first case it constitutes arrest of development; in the second, psychic paralysis. When the psychic paralysis is temporary, causing a suspension, but not a destruction, of mental activity, the name psychic inhibition is applied to it; on the other hand, when it is permanently established, it constitutes intellectual enfeeblement or dementia.

Perversion of the intellectual and moral faculties may also be *congenital* or *acquired.* Generally it results from an exaggeration of the mental automatism, and is designated by different terms, depending upon the particular function affected: hallucinations, delusions, morbid impulses, etc.

Mental diseases or *psychoses* are affections in which mental symptoms constitute a prominent feature. They differ from such mental infirmities as idiocy,

moral insanity, and many states of dementia, in that they are expressions of active pathological processes and not of permanent and fixed alterations of the mind.

Psychic infirmity, when not congenital, occurs as the ultimate outcome of some mental disease. The relation between the two conditions is analogous to that which exists between ankylosis of a joint and the arthritis which produced it; the latter is a disease, the former an infirmity.

When mental symptoms appear to exist alone, the mental disease is said to be *idiopathic,* and is called a *vesania;* when they are associated with alterations of the organic functions the disease is said to be *symptomatic* or *secondary.* This distinction is superfluous, and the subdivision resulting from it is artificial. In fact, the more the efforts of alienists are directed to the study of coexisting somatic disturbances, the more restricted does the number of vesanias become. The psychopathic processes which Kraepelin has designated by the term dementia præcox have for a long time been classified under various headings among the vesanias. Now, the number of physical signs observed in this affection (disorders of the tendon and pupillary reflexes, of the internal secretions, and of the general nutrition) is increasing from day to day; dementia præcox is therefore looked upon not as a purely mental affection, but as an affection of the entire organism with concomitant manifestations which are *chiefly,* but not *exclusively,* mental. Such is also the case with primary mental confusion and with the melancholias, and the time is not far off when, with great benefit to

psychiatry, the conception of the vesanias will be relegated to the past.

Two terms still remain for us to define: *mental alienation* and *insanity*. Although they are often employed indiscriminately, their meaning is not absolutely identical.

Etymologically, an alienated (Lat. *alienus*) individual is one who has become "estranged" from himself, who has lost the control of his intellectual activity, who, in other words, is not responsible for his actions. Unfortunately this definition rests upon the metaphysical conception of a free will and cannot find a place in medical science, which must be based upon observation and must adhere to demonstrable facts.

It is better to adopt an essentially practical definition, as has been done by most modern alienists, and to designate by the term mental alienation the entire class of pathological states in which the mental disorders, whatever their nature be otherwise, present an antisocial character. Not every individual suffering from a psychic affection is alienated. This term can be applied only to those who, on account of some mental disease or infirmity, are likely to enter into conflict with society and to find themselves, in consequence, unable to be an integral part of it.

The term *insanity* has a more restricted meaning than mental alienation. Generally it is applied to states of mental alienation which result from a psychosis, i.e., in which the mental disorder is an expression of an active pathological process. An idiot or a dement is alienated but, except in cases presenting complications, not an insane person.

This manual is divided into two parts. The first part treats of general psychiatry and comprises a study of the causes, symptoms, and treatment of mental disorders, considered independently of the affections in which they are encountered. The second part is devoted to special psychiatry, that is to say to the study of the individual psychoses. It has been thought advisable to devote considerable space to general psychiatry, at least as far as the limits of this work would allow. A precise if not an extensive knowledge of the most important elementary psychic disturbances would seem to be altogether indispensable for a full understanding of the genesis and evolution of the psychoses.

MANUAL OF PSYCHIATRY.

PART I.

GENERAL PSYCHIATRY.

CHAPTER I.

ETIOLOGY.

"On studying closely the etiology of mental diseases one soon recognizes the fact that in the great majority of cases the disease is produced—not by a particular or specific cause, but by a series of unfavorable conditions which first prepare the soil and then, by their simultaneous action, determine the outbreak of insanity." [1]

An individual of neuropathic ancestry and himself tuberculous, alcoholic, and exhausted, has an attack of melancholia. Should we attribute the attack to *exhaustion*, *alcoholism*, *tuberculosis*, or *heredity?* It is probable that all these enter into the causation of the

[1] Griesinger. *Die Pathologie und Therapie der Geisteskrankheiten.*

attack, but it is difficult to determine the part played by each of them and to isolate the specific pathogenic agent. While it is justifiable to distinguish theoretically predisposing causes and exciting causes in psychiatry, it is very difficult to decide whether any given cause belongs to the one or to the other group. The same pathogenic agent, for instance alcohol, may in one case create a predisposition which is brought into play by some subsequent causative factor; in another case it may merely bring out pre-existing predisposition.

The subdivision of the causes of mental diseases into two groups, one comprising the *predisposing* causes and the other the *exciting* causes, is therefore merely schematic. But as it has many advantages from a didactic standpoint, it is adopted in this work, the reader being again reminded that such subdivision is more or less arbitrary.

§ 1. Predisposing Causes.

"Mental diseases require for their development a soil in an especially modified condition of long standing."[1] The mind does not succumb to the pathogenic action of the causes which we shall study later on as exciting causes, unless its power of resistance is below the normal. A predisposition, latent or apparent, congenital or acquired, is necessary for a mental disease to originate and develop. Properly speaking, psychoses of the *cerebrum validum* do not exist. The predisposing

[1] Joffroy. *De l'aptitude convulsive.* Gazette hebdomadaire de médecine et de chirurgie, 11 février 1900.

causes therefore play an essential part in the etiology of mental diseases. They are classified into *general* and *individual.*

General predisposing causes. — The action of general predisposing causes is exerted upon groups collectively, and not upon isolated individuals. Such causes are: race, climate, social position, occupation, age, sex, and civil condition.

The influence of *race*[1] in the causation of psychoses is little known on account of the absence of sufficient statistical data. The Hebrew race is said to furnish a large proportion of neuropaths and psychopaths. It seems that among some races certain psychoses are particularly rare; thus general paresis is of very exceptional occurrence among Arabs and African negroes.

[An exceptional opportunity of investigating the influence of race upon the production of mental disease is afforded by the statistics of the hospitals for the insane in the city of New York where people of various races are living under approximately similar conditions. This opportunity has been well utilized in a recent study[2] which has revealed some striking facts. The following table, compiled from the figures furnished in the study here referred to, shows the relative frequency of certain psychoses in persons of different races, given in figures

[1] Buschan. *Einfluss der Rasse auf die Häufigkeit von Geisteskrankheiten.* Read at the convention of German alienists at Dresden, 1894. — Meilhon. *La folie chez les Arabes.* Annales médico-psychologiques, 1896, T. III et IV. — Goltzinger. *Les maladies mentales en Abyssinie.* Revue russe de psychiatrie, 1897, No. 33.— Duncan Greenlees. *Mental Diseases among the Natives of Southern Africa.* The Journal of Mental Science, 1895.

[2] George H. Kirby. *A Study in Race Psychopathology.* N. Y. State Hospitals Bulletin, New Series, Vol. I, No. 4, p. 663.

representing percentages of the total number of admissions for each race at the Manhattan State Hospital during the year ending September 30, 1908. It will be observed that the Irish race is most liable to alcoholic psychoses, while the Jewish race is practically free from them; the latter race, on the other hand, suffers more than the others from the functional psychoses (dementia præcox, manic-depressive insanity); the negroes are most liable to general paresis.]

Psychoses.	Irish.	Jewish.	German.	United States.	Italian.	Negro.
Senile psychoses	9.80	2.87	6.70	7.14	3.70	9.80
General paresis	7.59	14.05	20.10	17.46	9.87	29.41
Alcoholic psychoses	27.69	0.32	11.85	11.90	8.64	7.82
Dementia præcox	13.48	27.47	14.95	16.66	23.44	13.72
Manic-depressive insanity	16.66	28.43	12.89	18.25	13.58	9.80
Epileptic psychoses	2.20	1.59	4.64	3.17	4.93	3.92
Other psychoses	22.58	25.27	28.87	25.42	35.84	25.53
Total number of each race	408	313	194	126	81	51

The study of *climate* likewise gives us but little definite information. While it is indisputable that certain affections, such as cretinism, appear most frequently in certain countries (Valais), it is on the other hand altogether conjectural that the inhabitants of mountainous regions are more liable to insanity than those of the plains, as has been stated by some authors.[1]

A priori it would seem likely that the climate of warm countries exerts a debilitating influence upon the nervous system and thus favors the development of mental

[1] Lombroso. *L'homme de génie.*

disorders, especially in Europeans. I have found no statistics proving this; but an argument in favor of this supposition appears to me to be in the fact that a much larger number of suicides occurs in French and English troops when stationed in tropical countries than when living in Europe. While in France the number of suicides in the army is 29 per 100,000 soldiers, in Africa it rises to 69 for the same number of men. For the English army the proportions are 23 to 100,000 in the British Isles, and 48 in India.[1]

The influence of the *seasons* has been more thoroughly studied. According to Garnier,[2] who has taken for the basis of his work the number of admissions to the special infirmary of the poorhouse from 1872 to 1888, the frequency of mental alienation attains its maximum in June, and its minimum in January. During spring the number of admissions rises, to fall again during the latter part of summer and during autumn. The heat is evidently not the only factor, since the greatest number of cases does not correspond with the highest temperature of the year.[3]

It is interesting to note the almost complete parallelism existing between the annual curve of mental alienation and that of suicide. The statistics of Jeck,[4] based

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[1] *Archives de médecine et de pharmacie militaire*, Nov., 1892.

[2] Garnier. *La folie à Paris*, 1890, p. 18.

[3] "I intentionally omit the discussion of the action of the atmospheric conditions, which is but little known. Stormy weather favors the occurrence of agitation in the insane. . . . As to the influence of the lunar phases, it is, to say the least, entirely hypothetical." V. Toulouse. *Causes de la folie*, p. 147.

[4] *Selbstmord und Jahreszeit.* Frankfort Gazette, Sept. 24, 1898. Reviewed in *Centralblatt für Nervenheilk. u. Psychiat.*, Dec. 20, 1898.

upon about 100,000 cases of suicide, show that the highest point of the curve is in June and the lowest point in February, exactly as in the case of mental alienation.

Social factors play an important rôle in the etiology of mental diseases, as may be seen from a study of the history of the negro race in America. Before their emancipation the negroes were forced to hard labor, but were beyond the intense struggle for existence, had no cares, and were governed by rigorous rules of morality; in those times they were almost totally exempt from mental disorders. "Insanity was almost unknown among them."[1] Since their emancipation, having been given not only the rights but also the burdens of free men, they have abandoned themselves without restraint to all excesses, and mental alienation has become implanted in their race, so that in this respect they have now nothing to envy their former masters.

Civilization, by the stress that it imposes upon individuals, by the physical and moral want that is hidden beneath its brilliant exterior, and by the constantly increasing migration of the inhabitants of the country toward the large cities which it brings about, contributes to the production of predisposition to insanity. It is therefore not surprising that the number of the insane is constantly increasing in the so-called civilized countries. However, this increase is not so great as appears at first glance; for its accurate estimation it is necessary to keep in mind three factors that are

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[1] Witmer. *Geisteskrankheiten bei der farbigen Rasse in den vereinigten Staaten.* Allgemeine Zeitschrift für Psychiatrie, 1891.

often neglected, viz., the increase of the population, the progress of the science of statistics, [and the housing of patients, many of whom in former times lived at large and did not enter into the statistics]. However, the latest and most reliable statistical data furnish irrefutable proof of the fact that insanity is on the increase and show also the rate at which it is increasing.[1]

An enumeration has been made of all mental defectives (idiots and imbeciles, as well as the insane) existing in the Canton of Bern, Switzerland, on May 1, 1902, in their homes as well as in the various asylums. A comparison of these statistics with similar statistics obtained under identical conditions in 1871 gives the following results:

	In 1871.	In 1902.
Total population of the Canton of Bern	501,501	589,433
Number of mental defectives.....	2,804	5,029
Number of mental defectives per 1000 inhabitants.....	5.6	8.5

In other words, in thirty years the total population of the Canton of Bern has increased by 17 per cent, and the number of mental defectives by 79.4 per cent. It is hardly necessary to point out the gravity of such a showing.

According to Esquirol's statistics the number of the unmarried insane exceeds that of the married ones.

[1] *Ergebnisse der Zählung des Geisteskranken im Kanton Bern*, 1 *mai*, 1902. Mitteilungen der Bernischer statistischen Bureaus. 1903.

Toulouse states that many individuals remain single for the very reason that they are abnormal, and in many cases they subsequently become insane. Celibacy itself cannot therefore be incriminated; marriage, on the contrary, brings into play certain factors favoring the development of mental disorders, — in men by the increased strain imposed upon them, and in women by the various accidents which motherhood entails.[1]

Illegitimate children seem to be more liable to insanity than legitimate ones. This is partly due, undoubtedly, to the anomalous situation in which society places these unfortunates; but in many cases there is also a hereditary influence. It is probable that the parents of illegitimate children are often abnormal (Joffroy).

All *ages* do not equally predispose to insanity. Though rare in childhood, by reason of the rudimentary state of the psychic functions, mental disorders are, however, not unknown in that period of life.[2] Insanity attains its maximum of frequency between the ages of thirty-six and forty years among men, — when the struggle for existence is most intense, — and between the ages of twenty-five and thirty-five years among women, — when the burdens of maternity are greatest.

Two other periods of physiological development present an increased predisposition to insanity; one corresponds with the age of puberty (from fourteen to

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[1] The influence of the puerperal state is to be considered later on in detail.

[2] Manheimer. *Les troubles mentaux de l'enfance*, 1900. — Rodiet, *L'alcoolisme chez l'enfant.*

twenty-four years),[1] the other with the onset of senility (seventy years, according to Ziehen).[2] Finally, in women an increased predisposition is noticed at the period of the menopause.

In a word, all those periods of life which involve a strain of the organism expose the individual to mental disorders, whether such strain be due to the physiological development of the organism or whether it be imposed upon it by the exigencies of life.

Occupations involving the use of certain poisons (lead, phosphorus) may under unhygienic conditions favor the appearance of insanity.[3] Railroad employees furnish a large proportion of general paretics. Perhaps, as Huppert says, the constant jarring of the nervous system due to the vibration of the cars is to be held responsible for this; or it may be due to the heavy responsibility which rests upon the employees of even the lowest grades, as is suggested by Sprengeler; or possibly it is to be attributed to the alcoholic excesses so frequent among this class of people.[4]

Physical and moral want, isolation, and *absence of steady occupation* are among the predisposing factors, and often constitute potent causes of relapse in recovered patients discharged from asylums. These factors are all combined in the life of tramps, and the frequency of mental disorders among persons of that

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[1] Ziehen. *Les psychoses de la puberté.* Congrés internat. de médecine, Paris, 1900. — Marro. *Les psychoses de la puberté.* Ibid.

[2] Ziehen. *Psychiatrie,* p. 210.

[3] Quenzell. *Ueber Bleipsychosen.* Neurologisches Centralblatt, 1899.

[4] Hoppe. *Beitrag zur Kenntniss der progressiven Paralyse.* Allgemeine Zeitschrift für Psychiatrie, Vol. 58, No. 6.

class is thus partly explained. It must not be overlooked, however, that vagrancy is an effect as well as a cause of mental disturbance. Many of those who give themselves up to vagrancy are to begin with abnormal and incapable of adapting themselves to life in society.[1]

The number of the insane is almost the same in the two *sexes*. While certain etiological factors, such as stress and alcoholism, predominate in the male sex, the puerperal state and lactation in the female sex reëstablish the equilibrium. Possibly the number of insane women even slightly surpasses that of insane men.

Individual predisposing causes. — The predisposition to contract mental disease is but one of the manifestations of a more general pathological condition which has been designated by the term *degeneration*.[2] Degeneration affects the entire organism and constitutes under its different forms — psychopathies, neuropathies, arthritic manifestations, etc. — the feature of a large pathological class in which the insane constitute but a simple group.

The predisposition may be *congenital* or *acquired*. Though, as is more frequently the case, degenerates are such from the day of their birth, still one may become

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[1] Wilmann. *Die Psychosen der Landstreicher*. Allg. Zeitschr. f. Psychiat. 1903. Fasc. 1–2.

[2] The term *degeneration* is employed here and in many other chapters throughout this book in the broad French sense, namely, to designate psychopathic or neuropathic taint or make-up, and not in the restricted English sense implying necessarily an inferior or defective make-up and thus commonly applied to criminality, idiocy or imbecility, and sexual anomalies.

one of that class later in life, as a result of infectious diseases, of intoxications, or possibly of a defective mental and physical education.

"*Congenital predisposition* exists in more than half or in about two-thirds of the insane."[1] A morbid heredity constitutes its most frequent cause, but not the only one. Many authors confound hereditary with congenital predisposition; wrongly, however, for "One may be a congenital degenerate, yet not one by heredity."[2] By heredity is understood the existence in the ascendants of a normal or pathological peculiarity which is transmitted to the descendant. But, for instance, a mother suffering from Bright's disease, and without psychopathic taint, may give birth to a degenerate son, predisposed to mental alienation. This would not be a case of hereditary degeneration in the true sense of the word, still it would be one of congenital degeneration.

Heredity is *direct* when it passes from parent to offspring; *atavistic* when it skips a generation; *collateral* when the direct ascendants have been spared but the defect is found in one or several collateral relatives. It is *similar* when the anomaly present in the descendant is the same as that in the ascendant; in the opposite case it is *dissimilar*. The latter form is by far the most frequent, for, as Hunter says, "There are, properly speaking, no hereditary diseases, but only a hereditary predisposition to contract them." All possible evidences of degeneration are observed among the ascend-

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[1] Morselli. *Manuale delle malattie mentali*, p. 38.

[2] Féré. *La Famille névropathique*, p. 38. Paris, F. Alcan.

ants and collateral relatives of the insane: neuroses, psychoses, organic nervous diseases, defects of character and morals [criminality], arthritic manifestations, gout, diabetes, etc.

Heredity is *convergent* when the father and the mother both belong to families of degenerates. The relative frequency of this form reveals the curious fact that there is a peculiar mutual affinity among psychopaths (Féré). *A priori* this accumulated degeneration would seem to give rise to particularly grave consequences. At times it produces genius.

It is to convergent heredity that the bad influence of consanguinity is to be attributed. Consanguineous marriages do not create the defects, as is the general belief among the laity; they merely accentuate the tendencies of the family, whether these tendencies be good or bad, and therefore cannot exercise a bad influence except in degenerate families.[1]

Degeneration has, according to Morel, a tendency to become more pronounced from generation to generation. The final product of this retrogressive evolution is the *idiot*, who, sexually sterile, or placed in social positions which prevent his leaving a posterity, constitutes the last offspring of the degenerate race. This progressive course is quite frequently observed.[2] The law of Morel [3] is, however, not absolute; degeneration may be effectively combated in the individual by appropriate physical and moral hygienic measures, also by favorable

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[1] Peiper. *Consanguinität in der Ehe und deren Folge für die Descendenz.* Allg. Zeitschr. f. Psych., Vol. 58, No. 5.

[2] Doutrebente. Ann. méd. psych., 1869, II, p. 385.

[3] Morel. *Traité des maladies mentales*, p. 575.

intermarriages. If all families presenting hereditary defects were doomed to decay and death, the human species would long ago have become extinct.

[Recent investigations seem to show that those forms of insanity and allied neuropathic conditions which are transmissible by heredity are so transmitted in accordance with the laws of Mendel.[1] These laws, when found to hold good for any given hereditary character, render possible a fairly definite prediction of the types of offspring that may be expected to result from any given mating.

The following extensive quotation from a recent contribution to the subject of heredity in insanity[2] gives the essential points of the Mendelian laws, some results of an analysis of pedigrees of insane subjects, and rules of theoretical expectation.

"The total inheritance of an individual from his parents is divisible into unit characters each of which is inherited independently of all the rest and may therefore be studied without reference to other characters.

The inheritance of any such character is believed to be dependent upon the presence in the germ plasm of a unit of substance called a *determiner*.

With reference to any given character the condition in an individual may be *dominant* or *recessive:* the character is dominant when, depending on the presence of its determiner in the germ plasm, it is plainly manifest; and it is recessive when, owing to the lack of its determiner in the germ plasm, it is not present in the individual under consideration.

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[1] Davenport. *Eugenics.* Henry Holt & Co., N. Y., 1910. Goddard. *Heredity of Feeble-mindedness.* American Breeders Magazine, Sept., 1910.

[2] Cannon and Rosanoff. *Preliminary Report of a Study of Heredity in Insanity in the Light of the Mendelian Laws.* Journ. of Nerv. and Ment. Disease, May, 1911.

The dominant and recessive conditions of a character are often designated by the symbols *D* and *R*, respectively.

To make the matter clearer we may take as an example of a Mendelian character the case of eye color.

The brown color is the dominant condition while the blue color is the recessive condition, as was shown by Davenport.[1] It would seem that the inheritance of brown eyes is due to the presence in the germ plasm of a determiner upon which the formation of brown pigment in the anterior layers of the irides depends.

On the other hand, the inheritance of blue eyes is believed to be due to the lack of the determiner for brown eye pigment in the germ plasm; for the blue color of eyes is due merely to the absence of brown pigment, the effect of blue being produced by the choroid coat shining through the opalescent but pigment-free anterior layers of the irides in such cases.

It must be borne in mind that as regards the condition of any character every person inherits from two sources, namely, from each parent. Therefore, with reference to any character he may be pure bred or hybrid.

A case of inheritance of a character from both parents is spoken of as one of *duplex inheritance* and is often designated by the symbol *DD*.

A case of inheritance of a character from only one parent is spoken of as one of *simplex inheritance* and is designated by the symbol *DR*.

A case in which a character is not inherited from either parent, therefore exhibiting the recessive condition, is spoken of as one of *nulliplex inheritance* and is designated by the symbol *RR*.

We are now in a position to estimate the relative number of each type of offspring according to theoretical expectation in the case of any combination of mates.

There are but six theoretically possible combinations of mates. Continuing to make use of the case of eye color as an instance of a Mendelian character, let us consider in turn each theoretical possibility.

1. Both parents blue-eyed (nulliplex): all children will be blue-eyed, as may be represented by the following biological formula:

$$RR \times RR \infty RR.$$

2. One parent brown-eyed and simplex (that is to say, inheriting the determiner for brown eye pigment from one parent only), the

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[1] Science, N.S., Vol. XXVI, Nov. 1, 1907, pp. 589–592.

other blue-eyed: half the children will be brown-eyed and simplex and the other half blue-eyed:

$$DR \times RR \infty DR + RR.$$

3. One parent brown-eyed and duplex, the other blue-eyed all the children will be brown-eyed and simplex:

$$DD \times RR \infty DR.$$

4. Both parents brown-eyed and simplex: one-fourth of the children will be brown-eyed and duplex, one-half will be brown-eyed and simplex, and the remaining one-fourth will be blue-eyed (nulliplex):

$$DR \times DR \infty DD + 2\,DR + RR.$$

5. Both parents brown-eyed, one duplex the other simplex: all the children will be brown-eyed, half duplex and half simplex:

$$DD \times DR \infty DD + DR.$$

6. Both parents brown-eyed and duplex: all the children will be brown-eyed and duplex:

$$DD \times DD \infty DD.$$

It will be readily seen from these formulæ that in attempting to predict the proportions of the various types of offspring that may result from a given mating it is necessary to know, not only whether the character is in each parent dominant or recessive, but in the case of the dominant condition also whether it is duplex or simplex.

Turning again to the case of eye color, an individual with blue eyes we know to be nulliplex as he has no brown pigment in his eyes and therefore could not have inherited the determiner for brown eye pigment from either parent. But how are we to judge in the case of a brown-eyed person whether he has inherited the determiner for that character from both parents or only from one? — We can judge this only by a study of the ancestry and offspring of the individual.

To put the whole matter in a nutshell, the essential difference between a dominant and a recessive condition of a character is in the fact that in a case of simplex inheritance the dominant condition is plainly manifest while the recessive condition is not apparent and can be known to exist only through a study of ancestry and offspring.

This is important because it constitutes the criterion by which

we are able to determine whether any given inherited peculiarity or abnormality is, as compared with the average or normal condition, dominant or recessive."

"One of the first facts that appeared in the study of the pedigrees was that any form of insanity or even all the forms of hereditary insanity do not constitute an independent hereditary character, but that they are closely related to imbecility, epilepsy, hysteria, and various mental eccentricities that are not usually included under the designation insanity. In other words, the distinctions between these conditions as clinical entities cannot, in the light of their manner of origin, be regarded as deeply essential.

We find as manifestations of the neuropathic make-up in closely related persons cases of feeble-mindedness, convulsions in childhood from trivial causes or chronic epilepsy, cases of grave hysteria, various eccentricities, cases of dementia præcox, manic-depressive insanity, paranoic conditions, involutional psychoses, and the like.

It is not to be assumed, however, that what we have called here the neuropathic make-up constitutes the basis of all the clinical forms of nervous and mental disease; for, on the one hand, some of these conditions, like general paresis or alcoholic polyneuritis, are probably purely exogenous in origin, and on the other hand, others, like Huntington's chorea, are plainly independent Mendelian characters.

The pedigree charts contain a number of instances of neuropathic children born of normal parents, but not a single instance of a normal child born of parents both of whom are neuropathic.

This proves that the neuropathic make-up cannot be dominant over normal; but that if its transmission occurs at all in a manner corresponding to the Mendelian laws, it must be recessive to normal."

"We have seen that in our material the correspondence between theoretical expectation and actual findings is very close. That is to say, the hypothesis according to which the neuropathic make-up, as here defined, is recessive to normal, in the Mendelian sense, is borne out by the facts as shown in our pedigrees.

Should larger accumulations of such data in the future give similar results we shall be able to establish the following rules of theoretical expectation.

1. Both parents being neuropathic, all children will be neuropathic.

2. One parent being normal, but with the neuropathic taint from one parent, and the other parent being neuropathic, half the children

will be neuropathic and half will be normal but capable of transmitting the neuropathic make-up to their progeny.

3. One parent being normal and of pure normal ancestry and the other parent being neuropathic, all children will be normal but capable of transmitting the neuropathic make-up to their progeny.

4. Both parents being normal, but each with the neuropathic taint from one parent, one-fourth of the children will be normal and not capable of transmitting the neuropathic make-up to their progeny, one half will be normal but capable of transmitting the neuropathic make-up, and the remaining one-fourth will be neuropathic.

5. Both parents being normal, one of pure normal ancestry and the other with the neuropathic taint from one parent, all the children will be normal, half of them will be capable and half incapable of transmitting the neuropathic make-up to their progeny.

6. Both parents being normal and of pure normal ancestry, all children will be normal and not capable of transmitting the neuropathic make-up to their progeny."]

Degeneration, without being hereditary, may result from a pathogenic influence acting upon one of the parents at the moment of conception, or upon the mother during pregnancy. Thus endogenous or exogenous, acute or chronic *intoxications*, infectious diseases, stress and violent emotions, by their action upon the parents, often become causes of degeneration. Many authors, notably Fleming[1] and Bouchereau[2] have insisted on the importance of drunkenness of one of the parents at the moment of conception as a cause of degeneration. *Chronic alcoholism* is encountered with particular frequency in the parents of psychopaths and neuropaths; it produces all possible forms of degeneration, but creates more particularly a special morbid disposition which Joffroy has termed the *convulsive tendency*.

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[1] Quoted by Féré. *La Famille névropathique*, p. 16. Paris, F. Alcan.

[2] Bouchereau. *Ann. méd. psych.*, 1886, No. 4.

Many children of alcoholic parents die of convulsions at an early age, and of those who survive more than 50% become epileptics.[1]

Infectious diseases and traumatisms sustained by the mother during pregnancy often exert a harmful influence upon the psychic development of the offspring; and the same is true of physiological privations, painful emotions, etc. The "children of the siege" — those of the Parisian population who were born just after the siege of Paris and the Commune — furnished a very large proportion of individuals predisposed to insanity.

In the cases of *twin pregnancy*,[2] the influence of the factors of degeneration manifests itself frequently in an identical manner in the two children, who present at the same age the same mental disorders.[3] It is probable that twin pregnancy is in itself a cause of degeneration, the nutrition of two fœtuses being effected under less favorable conditions than that of a single fœtus.

All the causes here enumerated, including heredity, act upon the germ, the embryo, or the fœtus, producing an anomaly of development. The pathogenic influence is exerted not only upon the nervous system, the resistance of which is reduced and the development impeded, but upon the entire organism, bringing about malfor-

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[1] See statistics of Martin quoted by Joffroy. *De l'aptitude convulsive.* Gazette hebdomadaire de médecine et de chirurgie, 11 février, 1900.

[2] Serge Soukhanoff. *Sur la folie gémellaire.* Ann. med. psych., Sept.-Oct., 1900.

[3] The same similarity may be observed in children of the same family independently of twin births. (Trénel. *Maladies mentales familiales.* Ann. méd. psych., janvier, 1900. — Fouqué. *Maladies mentales familiales.* Thèse de Paris, 1899.)

mations which we shall study later on, — the physical signs of degeneration.

Each of the causes which we have enumerated can produce all the forms of degeneration, and it is consequently impossible to determine the character of the degenerative disorder from a study of the pathogenic agency which caused it. This proves the fact that the pathogenic agent, "whatever be its nature, always acts in the same manner," namely, "by diminishing the embryogenic energy." "There is therefore nothing surprising in the fact that degenerates by heredity do not differ from those by parental nutritive disorders, since degeneration results generally from disorders of embryogenesis, which are ultimately reduced to disorders of nutrition." [1]

Acquired predisposition results from the influence of the same causes which bring about congenital predisposition.[2] But their action is exercised directly upon the individual, instead of indirectly, through the medium of his progenitors. The younger the subject the more deep-rooted and durable is the predisposition which he acquires. The infectious diseases and the nutritive disorders of *infancy* frequently give rise to cerebral and meningeal complications which result in convulsions and impede the development of the nervous system, thus causing either an actual defect or a predisposition which may not become manifest until much later in life, in some cases not before senility.

Finally, predisposition may be acquired during *youth* or *adult age*. The later their action the more difficult it

[1] Féré. *Loc. cit.*, p. 231.

[2] Toulouse. *Les causes de la folie*, p. 30.

becomes to distinguish predisposing from exciting causes. Here we may recall the hypothetical case of alcoholism, mentioned at the beginning of this chapter; alcoholism may act in some cases as a predisposing cause and in others as an exciting cause, and it is not always possible to determine with certainty its mode of action.

§ 2. Exciting Causes.

As we have shown above, according to most alienists all the insane belong to the class of individuals presenting a neurotic predisposition; it does not, by any means, follow from this, however, that all those who are predisposed become insane. Save in the instances in which there is a congenital psychic infirmity, such as idiocy, moral insanity, or epilepsy, most of the psychoses are acquired and supervene in individuals previously sound in mind or at least free from evident and grave mental disorders. Thus we are forced to assume that some new factor must cause the cropping out of a previously latent morbid tendency.

The study of the *exciting causes* is therefore of great practical interest. We can do nothing against a predisposition except in an indirect and general way, by means of physical and moral hygienic measures, the effects of which may be felt only by the coming generations. The exciting causes are, on the contrary, directly accessible; in many cases we can either remove them or combat them. An example will render this idea clearer. Three individuals are from their birth equally charged with a hereditary predisposition. One of them leads a quiet and regular life, free from over-

work and excesses. In him the predisposition remains latent, and his life passes without the occurrence of mental disturbances. The second becomes addicted to alcoholism and in course of time develops the usual signs of the intoxication; but, conscious of his danger, he abandons his intemperate habits and recovers his health. Lastly, the third gives himself up to the same excesses as the second, but, instead of stopping in his fatal descent in time, he remains an inveterate drunkard, and, becoming demented, ends his days in an insane asylum. These three individuals have had very different fates, because the first has escaped the exciting cause, the second was prudent enough to combat it, while the third had entirely abandoned himself to its influence.

The exciting causes may be subdivided into *physical* and *psychic*.

Physical exciting causes. — We are to congratulate ourselves upon the present activity among alienists and neurologists in the investigation of the etiological relations of toxæmias, auto-intoxications, and infections. We shall see in the course of this work that many new, interesting, and important data have already been obtained through these researches.

The *germs of infectious diseases* elaborate toxins the action of which does not differ essentially from that of chemical poisons, such as alcohol or cocaine. The infectious diseases and the intoxications therefore form in psychiatry two groups that are very closely related etiologically and even clinically.

We distinguish mental disorders which are coincident in time with the infection itself from those that follow it. Only the former present specific features and merit

the name of *infectious psychoses*. They appear sometimes in the prodromal period, but more frequently they supervene at the height of the disease, and become alleviated or aggravated coincidently with the other symptoms of the infection.

The *psychoses which follow infectious diseases* depend upon the general exhaustion which accompanies convalescence. They appear chiefly as acute confusional insanity or as chronic psychoses terminating in dementia (dementia præcox). In the latter case the mental disease usually does not break out until several weeks or even several months have passed after the infectious disease. I have seen in Joffroy's clinic a case of catatonia which appeared three months after a very severe attack of scarlet fever. Possibly the primary affection brings about a general disorder of nutrition which does not become manifest until the lapse of a period of greater or lesser duration.

The confusional insanity and the chronic psychoses which follow infectious diseases do not present any special features and do not deserve to be classed as independent morbid entities. In their symptomatology and evolution they are identical with the same conditions when caused by traumatisms, overwork, autointoxications, or other agents.

All the acute infectious diseases may give rise to mental disorders: the *eruptive fevers, septicæmia, erysipelas, acute articular rheumatism, acute tuberculosis, typhoid fever, gonorrhœa*, etc.[1] Post-infectious psychoses are of

[1] Joffroy. *Fièvre typhoïde et folie.* Congrès de Médecine mentale, 1891. — Colombani. *Troubles psychiques dans les affections génito-urinaires de l'homme.* Thèse de Paris, 1900.

very frequent occurrence after *influenza*. Well recognized since the epidemics of recent years, they present no specific features, as was pointed out by the authors who were the first to make a study of them (Pick, Schmitz).[1]

The mental disorders often seen in the course of *acute articular rheumatism* are always the consequence of meningeal complications which either accompany or alternate with the articular inflammations.[2]

The mental disturbances due to *malarial infection* may be classified in three groups. In the first group are those which are associated with the attacks of malaria; these rightly belong to the febrile deliria. In the second are those which take the place of febrile attacks, constituting a form of *malaria larvata*. In the third are those which occur as complications of the cachexia of the pernicious forms.

These disturbances present no pathognomonic features, and only a knowledge of the history of the disease and the recurrence of the attacks furnish the possibility of making a diagnosis.[3]

The mental disorders of *hydrophobia* will be described separately.

Among the *chronic infections* two are deserving of

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[1] Schmitz. *Ueber Geistesstörungen nach Influenza.* Allg. Zeitschr. f. Psychiatrie, 1891.

[2] Griesinger. *Pathologie und Therapie der Geisteskrankheiten.* — V. Mabille et Lallemand. *Les folies diathésiques*, 1891.

[3] Lemoine et Chaumier. *Des troubles psychiques dans l'impaludisme.* Ann. méd. psych., 1887. — Krafft-Ebing. *Zur Intermittenz Larvata.* Arbeiten aus dem Gesammtgebiet der Psych. und Neuropath., No. 1, 1897. — Daniel Pasmanik. *Ueber Malaria-Psychosen.* Wiener medic. Wochenschrift, 1897, Nos. 12 and 13.

special consideration, namely, syphilis and tuberculosis.

Syphilis, as we shall see later on, is a factor of primary importance in the etiology of general paresis. It may also cause mental disorders by the localized lesions which it gives rise to (arteritis, gummata, areas of meningeal inflammation).

The frequency of *tuberculosis*, especially that of the lungs, in insane asylums has long been known. Esquirol has spoken of its frequency in melancholiacs. According to Hagen,[1] mortality from tuberculosis is five times as high among the insane as it is among the mentally sound; in France, according to Brouardel, only three times. More recent statistics seem to show that these alarming proportions are somewhat exaggerated. According to Heimann pulmonary tuberculosis is not notably more frequent in the population of asylums than it is in the normal population.

It cannot be denied, however, that certain psychoses, through the nutritive disorders with which they are associated, favor its development. But in mental alienation tuberculosis is not merely an *effect;* it may also be a *cause.*

Chartier [2] has made an interesting study of the mental disorders connected with tuberculosis. He distinguishes four classes of cases:

(*a*) The psychosis originates during the course of consumption;

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[1] Quoted by Heimann. *Die Todesursachen bei Geisteskrankheiten.* Allg. Zeitschr. f. Psychiatrie, Vol. LVII, No. 4.

[2] Chartier. *De la phtisie et en particulier de la phtisie latente dans ses rapports avec les psychoses.* Thèse de Paris, 1899.

(*b*) It alternates with the tuberculous exacerbations, and constitutes a sort of tuberculous equivalent;

(*c*) It appears after the apparent cure of the pulmonary affection;

(*d*) It develops in a subject tainted with latent tuberculosis, i.e., tuberculosis which does not present the usual symptoms of pulmonary invasion by the bacillus of Koch.

In England a special clinical form has been described under the name of tubercular insanity, which develops in three stages. The first stage is marked by change of character — "unsociability, irritability, and an entire want of buoyancy and proper enjoyment of life." [1] The second stage presents the acute symptoms: ideas of persecution, maniacal states. The third stage is a state of semi-stupor. Chartier, though admitting the existence of such a form, does not consider it as specific, and adheres to the opinion generally accepted in France "that most of the known forms of mental alienation may be observed coincidently with latent tuberculosis." [2]

Symptomatically tuberculosis manifests itself most frequently by states of depression.[3] This is comparable to the abnormal sadness so often noticed in tubercular patients at the beginning of their affection. Whatever form they may assume, the mental disorders probably always indicate the same pathogenesis, and result from the action of the tubercular toxine upon the nervous

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[1] Clouston. *Clinical Lectures on Mental Diseases*, p. 510.

[2] Chartier. *Loc. cit.*, p. 70.

[3] Dufour et Rabaud. *Bulletin de la Société anatomique*, Mars, 1899.

system, also from the impairment of the general nutrition.

All the *intoxications*, exogenous or endogenous, are capable of determining the occurrence of mental disturbances; in practice some of these toxic agencies are encountered with especial frequency.

Among the exogenous poisons the action of which is most apt to affect the nervous system may be named, in the order of their clinical importance, alcohol, opium and its principal alkaloid morphine, cocaine, hashish, carbonic oxide, lead, mercury, chloral, chloroform, iodoform, belladonna and atropine, hyosciamus, hyosciamine, hyoscine, salicylic acid and its compounds, thyroid substance, tobacco, etc. Of these *alcohol* and *morphine* are by far the most important from a practical point of view.

Pellagra, the toxic origin of which is generally accepted, is often accompanied by mental disturbances by predilection in the form of melancholia.[1]

Among the intoxications of endogenous origin, or *auto-intoxications*, may be mentioned *uræmia*, *myxœdema*, and *acromegaly*.[2] The importance attributed to the auto-intoxications is growing from day to day. We shall see that according to Kraepelin's ingenious conception general paresis is classed as a disease caused by auto-intoxication. Many cases of dementia præcox seem to indicate an analogous pathogenesis.

In a group closely related to the preceding are the

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[1] Warnock. *Some Cases of Pellagrous Insanity.* The Journ. of Ment. Science, Jan., 1902.

[2] Joffroy. *Sur un cas d'acromégalie avec démence.* Progrès médic., février, 1898. — Brunet. *État mental des acromégaliques.* Thèse de Paris, 1899.

constitutional disorders, which may likewise be complicated by psychic disturbances. *Gout* occasions the occurrence of mental disorders which either precede or follow the attacks, or in some instances replace them, constituting veritable metastases.[1]

The association of psychic disturbances with *diabetes* has long since been noted by various authors. Before the time of Marchal de Calvi glycosuria was generally thought to be the consequence of nervous or mental affections; this author has shown that more often the relation is reversed, that the latter states are the effect and not the cause.[2]

Laudenheimer,[3] in a highly interesting and very thorough work, divided the cases in which diabetes and mental disorders coexist into four classes:

(1) The diabetes and the mental disorder coexist without any etiological relation;

(2) The diabetes is the consequence of the mental disease;

(3) The diabetes is the cause of the mental disease;

(4) The diabetes and the mental disorder are two effects of the same outside cause.

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[1] Régis et Chevalier-Lavaure. *Des auto-intoxications dans les maladies mentales.* Congrès de médecine mentale, 1894. — Séglas. *Paper on the same subject.* Ibid. — Mabille. *L'albuminurie chez les arthritiques et les auto-intoxications dans les maladies mentales.* Ibid. — Von Solder. *Des psychoses aiguës dans la coprostase.* Jahrb. f. Psych., 1898, Nos. 1 and 2. — *Delle auto-intossicazioni nella Patogenesi delle Neurosi e delle Psichosi.* Il Manicomio moderno, Vol. XIV, No. 3.

[2] Cotard. *Aliénation mentale et diabète.* — Bernard et Féré. *Des troubles mentaux chez les diabétiques.* Arch. de neurol., 1882, Vol. IV.

[3] Rudolph Laudenheimer. *Diabetes und Geistesstörung.* Berlin. klin. Wochenschr., 1898, Nos. 21 and 24.

Clinically the mental disorders of diabetes frequently assume the form of depression; there is, however, no absolute rule with regard to this.

Aside from true diabetes, *simple glycosuria* is frequently encountered among the insane; it is usually intermittent, and follows intense emotional states.

Overwork, inanition, cachectic diseases[1] are, by reason of the general exhaustion and the nutritive disorders which they bring about, among the important factors in the etiology of insanity. Their most usual clinical expression is acute confusional insanity. In the deliria due to inanition the mental disturbance occurs in the form of hallucinosis; the patient is apt to have visions of feasts and festivities, and sees before him tables loaded with eatables.

Chronic exhaustion manifests itself psychically by neurasthenic states, the study of which belongs properly to the domain of neurology.

Most *organic lesions* are capable of affecting the psychic functions. Uræmic insanity shows the importance of *renal lesions* in the etiology of mental diseases. The *general vascular affections* (arteritis, atheroma), through their interference with cerebral nutrition, are the principal factors in certain organic dementias.

Heart-disease[2] is common in the insane. The statistics of Strecker,[3] based upon 1000 autopsies performed

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[1] Klippel. *Les accidents nerveux du cancer.* Arch. gén. de médecine, 1892.

[2] Fischer. *Ueber psychosen bei Herzkranken.* Allg. Zeitschr. f. Psychiatrie, Vol. LIV, No. 6. — Pelgmann. *Toxämische Delirien bei Herzkranken.* Deutsche medic. Wochenschr., 1899, No. 19.

[3] Strecker. Virchow's Arch. Vol. 126.

in insane asylums, show that 61.7% of the men and 42.7% of the women present cardiac lesions. These are quite frequently the consequence of the psychoses, especially of those which are accompanied by chronic excitement (Krafft-Ebing). Sometimes also they precede the mental trouble, and play an important part in the causation of the attack.

Valvular insufficiencies and changes in the myocardium act either directly by giving rise to disorders of the cerebral circulation, or indirectly by bringing about renal and hepatic insufficiency.

Everybody is familiar with the changes of disposition which sufferers from dental caries,[1] dyspepsia, or liver troubles [2] are subject to. Diseases of the stomach, intestine, and particularly those of the liver sometimes engender veritable psychoses. Such is also the case with affections of the generative organs, the importance of which, though of late much exaggerated, especially in the case of women, is none the less real. Similarly, functional disorders of these organs may be accompanied by disturbances in the psychic sphere. *Puberty* is often characterized by change of disposition, scruples, impulsive tendencies, and enthusiasm which is as fleeting as it is uncalled for. Diverse mental disorders may make their appearance at this epoch; periodic insanity, obsessions, dementia præcox, — to say nothing of

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[1] Léopold-Lévi. *Hépatotoxhémie nerveuse.* Arch. gén. de méd., mai, juin, juillet, 1897. — Cullerre. *Hépatisme et psychoses.* Arch. de neurol., Nov. 1898. — Klippel. *Insuffisance hépatique dans les maladies mentales.* Arch. gén. de méd., 1892.

[2] Poinsot. *Création et fonctionnement du service dentaire a l'asile Sainte-Anne (asile clinique).* Travaux du troisième Congrès dentaire international, huitième section, Paris, 1900.

neuroses, such as epilepsy and hysteria, of which the earliest manifestations appear in many cases at the age of puberty.

The slight mental troubles that often occur in the *menstrual periods* in some cases assume the proportions of veritable psychoses. The onset of menstruation in young women is also, at times, the origin of a more or less serious psychopathic process. Various mental troubles may make their appearance at this age, such as the periodic psychoses, dementia præcox, hysterical attacks, etc.[1]

The mental disorders accompanying visceral lesions were formerly called *reflex insanities*. It was supposed that an impression originating from the diseased organ and transmitted to the brain disturbed the psychic equilibrium and gave rise to insanity. Esquirol attached considerable importance to displacements of the transverse colon. In reality the pathogenesis of these cases is entirely different, and consists most likely in an auto-intoxication or an infection, the starting-point of which is in the diseased organ.

The *puerperal state*[2] is a common cause of mental alienation. The puerperal psychoses do not form a homogeneous group, either from an etiological or from a clinical standpoint. The cause of the disorder may be either infection, or auto-intoxication, or profound anæmia following a hemorrhage. These diverse factors may act simultaneously. The clinical forms are most

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[1] Hegar. *Zur Frage der sogenannten Menstrualpsychosen.* Allg. Zeitschr. f. Psychiatrie, Vol. LVIII, Nos. 2 and 3.

[2] Castin. *Des psychoses puerpérales dans leurs rapports avec la dégénérescence mentale.* Thèse, Paris, 1899.

frequently primary mental confusion and dementia præcox. Sometimes the puerperal state merely brings to light a latent psychosis (epileptic, hysterical, or periodic insanity). In other words, there is no single puerperal insanity, but "insanities, or rather psychoses of the puerperium." [1]

The puerperal psychoses proper are to be distinguished from the psychoses of pregnancy and from those of lactation. The first are the most frequent. The following proportions are given by Aschaffenburg:[2] pregnancy 22.7%; puerperal state (childbirth) 57.6%; lactation 17.7%.

Traumatisms are often mentioned in the antecedents of insane patients. It is not always easy to determine the degree of their influence, for generally they precede very remotely the onset of the psychosis. Stolper[3] distinguishes three groups of traumatic psychoses:

(1) Trauma-psychoses: the traumatism is the sole cause;

(2) Predisposition-trauma-psychoses: the traumatism merely brings out a pre-existing predisposition;

(3) Trauma-predisposition-psychoses; the traumatism creates a predisposition, which some subsequent cause develops into a psychosis.

In reality the predisposition is present in all forms of psychoses, traumatic or otherwise, so that the first two groups of Stolper fuse into one.

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[1] Ballet. *Leçons cliniques sur les névroses et les psychoses.*

[2] Aschaffenburg. *Ueber die klinischen Formen der Wochenbett-psychosen.* Allg. Zeitschr. f. Psychiatrie, Vol. LVIII, Nos. 2 and 3.

[3] Quoted by von Muralt. *Katatonische Krankheitsbilder nach Kopfverletzungen.* Allg. Zeitschr. f. Psychiatrie, Vol. LVII, No. 4.

Traumatic psychoses[1] may present themselves under an infinite variety of clinical forms; catatonia (von Muralt), general paresis (Vallon), periodic insanity, neurasthenia, etc.

Like puerperal psychoses, *post-operative* psychoses have a complex pathogenesis.[2] They may result from the shock of the operation itself, from the anæmia following profuse hemorrhage, from an infection, or from a medicinal intoxication. One must also bear in mind the anxiety preceding the operation, which may attain considerable intensity, especially in degenerates (Joffroy).

Clinically post-operative psychoses assume various forms and do not constitute a special morbid entity.

All *organic nervous diseases* — tabes, multiple sclerosis, focal cerebral lesions, etc. — and all *neuroses* — epilepsy, hysteria, exophthalmic goitre,[3] chorea,[4] paralysis agitans, etc. — may be accompanied by mental disorders. Focal lesions, epilepsy, and hysteria, the psychic manifestations of which present special features, will form the respective subjects of special chapters.

Congenital or acquired *neurasthenia* constitutes a favorable soil for the appearance of certain transient or permanent psychic derangements: obsessions, essential

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[1] Kaplan. *Kopftrauma und Psychose.* Transactions of the Psychiatrical Society of Berlin. Published in *Centralblatt f. Nervenheilkunde und Psychiatrie*, May 24, 1899.

[2] Truelle. *Étude critique sur les psychoses dites post-opératoires.* Thèse, Paris, 1898. — Picqué. *Du délire psychique post-opératoire.* Ann. médic. psychol., July and August, 1898. — Joffroy. *Folie post-opératoire.* Presse médicale, March, 1898.

[3] Joffroy. *Des rapports de la folie et du goitre exophtalmique.* Ann. méd. psych., 1890.

[4] Joffroy. *De la folie choréique.* Sem. médic., 1893. — Ladame. *Troubles psychiques dans la chorée dégénérative.* Arch. de Neur., 1900.

anxiety, etc. Neurasthenic disorders are always associated with psychasthenic disorders, which may almost approach in intensity the depression of melancholia.

Finally the *neuralgias* may, according to Krafft-Ebing,[1] engender true transient psychoses. Such is also the case with *migraine*.[2]

Psychic causes. — The laity is apt to exaggerate the importance of psychic causes, often mistaking the first symptoms of the disease for its cause. It is often said of an individual that jealousy or anger has driven him insane, while in reality the jealousy or the anger is the first sign of derangement in his case. One may apply to these passions what Féré justly said concerning love, "to become insane from love, one must have an insane love."

The violent emotions do play a part, however, in the production of mental disorders, at least as adjuvant causes. I had under my care a precocious dement whose affection began several weeks after a fire in which she nearly perished.

The influence of prolonged or repeated emotions is still more evident. Great national commotions and wars cause an increase in the number of the insane. It is true that the part played by the emotions is, in these cases, difficult to determine. Indeed a great many other causes co-operate with them. As the most important of these may be mentioned alcoholic excesses, stress, and privations.

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[1] Krafft-Ebing. *Arbeiten*, 1897, I, p. 81, and Allgem. Zeitschr. f. Psychiatrie, Vol. LVIII, Nos. 2 and 3.

[2] Krafft-Ebing. *Ueber Migränepsychosen.* Jahrbuch f. Psychiatrie u. Neurol., 1902.

Prolonged anxiety, constant perplexity, also play a certain part in the etiology of the psychoses. These phenomena, seen chiefly in weak-minded individuals, are frequently in themselves the symptoms of an already established psychopathic state, and here again the danger exists of mistaking the effect for the cause.

This is likewise true of *exaggerated religious practices* and of *extreme sensibility*, which also indicate an inferior mental state.

Isolation is said to produce mental disorders in prisoners. It is not impossible that the abolition of all relations with their like and the absence of any occupation capable of arousing the interest exercise an unfavorable influence upon the mental condition of prisoners. But the action of these causes should not be overestimated, for it must not be lost sight of that most prisoners are congenitally abnormal, and that in some insanity has existed, unrecognized, before their imprisonment.[1]

Mental disorders may be communicated from one individual to another. This constitutes *mental contagion*, and is to be attributed to suggestion (induced insanity of the Germans).

Often the delusions are transmitted to only one individual; we then have the "*délire à deux.*" This generally occurs in the following manner: one individua'

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[1] Kirn. Allg. Zeitschr. f. Psychiat., XVIII, 13. — Rüdin. *Klinische Formen der Gefängniss-Psychosen.* Allg. Zeitschr. f. Psychiat., LVIII, Nos. 2 and 3. — Taty. *Aliénés méconnus et condamnés.* Congrès de médecins aliénistes et neurologistes, 10th Session, Marseille, 1899. — Pactet et Colin. *Les aliénés devant la justice.* Encyclopédie des aide-mémoire.

becomes insane and communicates his ideas to some member of his family or to one of his friends. The latter, who is always feeble-minded, accepts them without question, and sometimes even finds proof of them in his own hallucinations. His delusions are essentially the functions of the first individual; they undergo the same fluctuations, and disappear with the removal of the influence of the other patient. The mechanism is the same when the contagion spreads itself over a more or less numerous group of individuals, as, for instance, in psychoses of a religious type. In most of the reported instances such epidemics become rapidly extinguished upon the removal of the influence of the leader.[1] This rule, however, is not without exceptions. In some cases it happens that the delusions, once implanted in the second patient, develop of their own accord, so that removal of the influence of the first is followed by no improvement.[2]

[Recent special researches[3] seem to indicate that the importance of psychic factors in the causation of insanity is much greater than has been suspected.

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[1] Regis. *De la folie à deux.* Thèse, Paris, 1880. — Marandon de Montyel. *La folie à deux.* Gaz. des Hôpit., 1894. — Dervey. *Remarks upon Psychical Contagion and Infection.* American Journ. of Insanity, Oct. 1899. — Ninas-Rodriguez. *Epidémie de folie religieuse au Brésil.* Ann. méd. psych., May-June, 1898. — Falret. *Études cliniques sur les maladies mentales et nerveuses*, Paris, 1890, p. 545. — Michel Delines. *Les emmurés de Tornovo.* Analyse d'un travail de Sikorski. Revue Scient., Sept. 3, 1898.

[2] Wallich. *Ueber einige Fälle psychischer Infektion.* Allg. Zeitschr. f. Psychiat., 1903, fasc. 6. — Witte. *Ein Fall von inducirtem Irresein. Ibid.*, fasc. 1–2.

[3] Jung. *The Psychology of Dementia Præcox.* English translation by Peterson and Brill, New York, 1909.

Aside from the cases in which the psychosis is clearly precipitated by financial ruin, the death of a near relative, or some other disaster, there are many other cases of subjects with, perhaps, unduly vulnerable mental organizations in whom the psychosis develops gradually as a result of educational errors, the acquirement of hurtful habits of thought, or the influence of an uncongenial environment. Further, even in cases occurring upon a basis of organic brain disease, alcoholic intoxication, or other physical factor, psychic factors often lend a special coloring to the clinical picture and exert an aggravating influence upon the course of the disease.]

CHAPTER II.

SYMPTOMATOLOGY. — DISORDERS OF PERCEPTION.

INSUFFICIENCY OF PERCEPTION. — ILLUSIONS. — HALLUCINATIONS.

"THE senses," says Jean Muller, "inform us of the various conditions of our body by the special sensations transmitted through the sensory nerves. They also enable us to recognize the qualities and the changes of the bodies which surround us, in so far as these determine the particular state of the nerves."[1] The senses, in other words, are the means through which we obtain the knowledge of our own bodies and of the external world.

For the exercise of their function are necessary: (1) the reception of an internal or an external impression by a peripheral organ; (2) the transmission of this impression to the brain; (3) its elaboration by the cortical cells, which transform it into a phenomenon of consciousness: first sensation and then perception. Only the latter operation is of interest to the alienist.

We shall study successively:

I. Insufficiency of perception;

II. Illusions (inaccurate perceptions);

III. Hallucinations (imaginary perceptions). Halluci-

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[1] Jean Muller. *Manuel de Physiologie.*

nations and illusions are often classed together under the name of *psychosensory disorders.*

§ 1. Insufficiency of Perception.

Insufficiency of perception in its slightest degree may be met with in states of depression, at the onset of confusional states, etc. All external impressions are vague, uncertain, and strange. The patients complain that everything has changed in them and around them: objects and persons have no more their usual aspect; the sound of their own voice startles them.

In a more marked degree of insufficiency external impressions no longer convey to the mind of the subject any clear or precise idea; questions are either not understood at all, or understood only when they are very simple, brief, energetically put, and repeated several times. External stimulation, even the strongest, is but vaguely perceived and often causes no reaction proportionate to its intensity or appropriate to its nature.

Finally, complete paralysis of one or several forms of psychosensory activity is observed either in connection with profound disorders of consciousness, as in confusional insanity of the stuporous form, or by itself, as in hysterical amaurosis or deafness.

Insufficiency of perception constitutes an important element of clouding of the consciousness, which will be considered later on.

Its pathogenesis is closely connected with disorders of ideation. The normal act of perception really consists of two elements: (1) a sensory impression; (2) a

series of associations of ideas which enables the mind to recognize the impression and which almost always completes it and renders it more definite. If the associations of ideas are not formed in sufficient numbers the perception can only be vague and ill defined.

§ 2. Illusions (Inaccurate Perceptions).

An *illusion* may be defined as a perception which alters the qualities of the object perceived and presents it to the consciousness in a form other than its real one. An individual who hears insulting words in the singing of birds or in the noise of carriage-wheels experiences an illusion.

Illusions are of frequent occurrence in normal individuals. There is no one to whom the folds of a curtain seen in semi-darkness have not appeared to assume more or less fantastic shapes. But the mind, aided by the testimony of the other senses, recognizes the abnormal character of the image; the illusion is recognized as such. By the insane it is on the contrary taken as an exact perception and exercises a more or less marked influence upon all the intellectual functions.

Illusions affect all the senses and present, in the case of each, features analogous to those of hallucinations; I shall therefore not describe them here. I shall say but a few words concerning illusions of sight which present certain peculiarities.

Illusions of sight may occur in most of the psychoses, but are chiefly found in the toxic psychoses and in the infectious deliria. When these illusions are pertaining

to persons they lead to mistakes of identity. Many insane persons mistake their fellow patients or employees of the institution for their relatives or friends. This form of illusion sometimes attains such completeness that the subject may, while at a hospital, believe himself to be at his home.

Illusions are very apt to occur in the midst of vague impressions: those of hearing in the presence of confusing noises, and those of sight in semi-darkness.

Like incomplete perceptions, inaccurate perceptions or illusions are the consequence of a disorder of ideation; abnormal associations replace normal ones, which are absent, and complete the image, altering it at the same time.

§ 3. Hallucinations (Imaginary Perceptions).

"A person who has an inmost conviction of a sensation actually perceived, when no external object capable of exciting such sensation is within reach of the senses, is in a state of hallucination" (Esquirol).

"By hallucinations are understood subjective sensory images which are projected outwardly and which in that way acquire objectivity and reality" (Griesinger).

"A hallucination is a perception without an object" (Ball).

These three definitions are essentially identical. That of Ball appears to me to be the best on account of its conciseness.

Hallucinations may affect any of the senses. There are therefore as many varieties of hallucinations as there are senses.

Some properties are common to all varieties of hallucinations, others are peculiar to certain varieties.

A. PROPERTIES COMMON TO ALL VARIETIES OF HALLUCINATIONS.

Hallucinations exercise an influence upon the psychic personality of the patient, which varies with the subject, the nature of the disease, and the different stages of the same disease.

In a general way it may be stated that the more acute the character of the mental disorder (acute psychoses, periods of exacerbation in chronic psychoses) and the less enfeebled the intellectual activity, the more marked is the influence of the hallucinations. In accordance with this rule, the correctness of which is clinically demonstrated, hallucinations abate in their influence as the acute stage of the psychosis subsides — either when the patient enters upon convalescence, or when he lapses into dementia; under such conditions they may persist for a greater or lesser length of time without exercising any influence upon the patient's emotions or actions.

The influence of hallucinations upon the psychic functions.—*Attention.*—Hallucinations force themselves upon the attention of the patient. In the case of hallucinations of hearing, for instance, he is compelled to listen to them, sometimes in spite of himself, no matter what their degree of clearness is,—whether they consist of distinctly spoken words or phrases, or of a scarcely perceptible murmur.

The patient is sometimes conscious of the tyrannical dominating power to which he is subjected. "I am

forced to listen to them," said one of these unfortunates; "when they (his persecutors) get at me I can do no work, cannot follow any conversation, *I am wholly in their power.*" Hallucinations thus resemble imperative ideas and autochthonous ideas which we shall study later on.

Judgment.—Hallucinations may coexist with sound judgment and be recognized by the patient as a pathological phenomenon. They are then called *conscious hallucinations.* Such instances are not very rare and consist chiefly of hallucinations of sight. A celebrated case is that of Nicolai, the bookseller. "The visions began in 1791, after an omission of a bloodletting and an application of leeches which he underwent habitually for hemorrhoids. All of a sudden, following a strong emotion, he saw before him the form of a dead person, and on the same day diverse other figures passed before his eyes. This repeated itself on numerous occasions.

"The visions were involuntary and he was unable to form an image of any person at will. Most of the time, also, the phantoms were those of persons unknown to him. They appeared during the day as well as during the night, assuming the colors of the natural objects, though they were somewhat paler. After a few days they began also to speak. One month after the onset of this affection, leeches were applied; on the same day the figures became more hazy and less mobile. They disappeared finally after Nicolai had for some time seen only certain portions of some of them." [1]

[1] Jean Muller. *Loc cit.*

Some individuals possess the power of producing hallucinations at will. Goethe had that power. "As I shut my eyes," he said, "and lower my head I figure to myself a flower in the center of my visual organ; this flower does not retain for an instant its original form; it forthwith rearranges itself and from its interior appear other flowers with multicolored or sometimes green petals; they are not natural flowers, but fantastic, though regular, figures like the rosettes of the sculptors. It is impossible for me to fix the creation, *but it lasts as long as I desire without increasing or diminishing.*" [1]

In the great majority of cases the judgment, itself disordered, is unable to correct the psychosensory error: *the hallucination is taken for a true perception.* Though sometimes in the beginning of the disease the subject experiences some doubts, this transitory incertitude is soon replaced by a blind belief in the imaginary perception. "We observe," says Wernicke, "that the reality of a hallucination is maintained against the testimony of all the other senses, and that the patient resorts to the most fantastic explanations, rather than admit any doubt as to the reality of his perception." [2] An individual, alone in the open field, hears a voice calling him a thief. He will invent the most absurd hypotheses rather than believe himself a victim of a pathological disorder.

Certain patients, chiefly the weak-minded and the demented, accept their hallucinations without inquiring

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[1] Jean Muller. *Loc cit.*

[2] Wernicke. *Grundriss der Psychiatrie*, p. 126.

as to their origin or mechanism; others on the contrary strive to give explanations which vary with the nature of the malady, the degree of the patient's education and intelligence, and the current ideas of the times. In the middle ages psychosensory disorders were often attributed to diabolic intervention, and this not only by patients but also by their friends. Patients of our own times mostly resort for explanations to the great modern inventions (electric currents, telephone, X-rays, wireless telegraphy, etc.). Some fancy to themselves apparatus or imaginary forces. One patient attributed his disturbances of general sensibility to a "magneto-electro-psychologic" current. Another received the visions from a "theologico-celestial projector."

Affectivity.—Hallucinations are sometimes agreeable, at other times painful, and occasionally, chiefly in dements, indifferent.

In the first case their outward manifestations are an appearance of satisfaction, an expression of happiness, and sometimes ecstatic attitudes.

In the second case, which is the most frequent, the patients become sad, gloomy, or, on the contrary, agitated and violent, a prey to anxiety or anger.

The two kinds of hallucinations, agreeable and painful, are occasionally encountered in the same subject. Sometimes they follow each other without any regular order and are coupled with a variable disposition and incoherent delusions, as in maniacs and in general paretics; at other times they follow each other somewhat systematically—the painful hallucinations are combated by the agreeable ones. The patients

often speak of their persecutors, who insult, threaten, and abuse them, and of their defenders who console them, reassure them, and repair the damage done by the former. A persecuted patient heard a voice call her "a slut"; immediately another voice responded, "He lies; she is a brave woman." Some patients tell of their limbs being smashed and their viscera extracted every night, but that nevertheless they are sound and safe when they arise, thanks to the good offices of their defenders, who properly replace everything. These two sets of hallucinations constitute what the patients sometimes call the *attack* and the *defense*.

The indifferent hallucinations are of but little interest. They are met with at the terminal periods of processes of deterioration, and also at the beginning of convalescence in acute psychoses. In the latter case they rapidly become conscious hallucinations and finally disappear.

Reactions.—The influence of hallucinations upon the will depends upon the state of the judgment and of the affectivity. If the judgment is sound, if the hallucinations are looked upon as pathological phenomena, they give rise to no reaction; and the same is the case when they make no impression upon the emotions.

But when they are accepted by the patient as real perceptions and influence strongly the emotional state, hallucinations, on the contrary, govern the will to a very considerable extent and prompt the patient to defend himself against the ill-treatment of which he believes himself to be the object or to obey the commands which are given him (imperative hallucinations).

Hence the frequency of violent and criminal acts committed by the insane, and the well-known axiom in psychiatry according to which all subjects of hallucinations are dangerous patients. Revington has found, from a study of forty-nine cases of homicide committed by insane patients, that in most instances the murder resulted from a hallucination.[1]

The reactions caused by hallucinations are often abrupt, unreasonable, and of an impulsive character, especially in the feeble-minded and in patients with profound clouding of consciousness (delirium tremens, epileptic delirium). But they may also show all the evidences of careful premeditation. Certain persecuted patients, exasperated by their painful hallucinations, prepare their vengeance with infinite precaution.

The influence of hallucinations upon the will is often so powerful that nothing can combat it, neither the sense of duty, nor the love of family, nor even the instinct of self-preservation. A patient passing near a river heard a voice tell him: "Throw yourself into the water." He obeyed without hesitation, and to justify himself declared simply: "They told me to do it; I was forced to obey."

Combined hallucinations. — Sometimes hallucinations affect but one sense. Such are the hallucinations of hearing at the beginning of systematized delusional states. Generally, however, the pathological disorder affects several senses, the different hallucinations either

[1] Revington. *Mental Conditions Resulting in Homicide.* The Journ. of Ment. Sc., April, 1902.

following one another, or existing together without any correlation, or combining themselves and producing complex scenes either of a fantastic aspect or analogous to real life. In the latter case they bear the name of *combined hallucinations*. The patient sees imaginary persons, hears them speak, feels the blows that they inflict upon him, makes efforts to reject the poisonous substances which they force into his mouth, etc. This state, closely related to dreams, is always accompanied with marked clouding of the intellect.

Diagnosis of hallucinations.—Two possibilities may present themselves: (1) the patient directly informs the physician about his condition; (2) he gives no information whatever, either because of his reticence or because of his intellectual obtuseness.

In the first case the diagnosis of hallucinations is generally easy. It is necessary, however, to ascertain that the pathological phenomenon is really a hallucination, and not an illusion; in other words, that it is a perception without an object, and not an inaccurate perception. Only a detailed examination of the circumstances under which the phenomenon shows itself may prevent an error; it is very difficult indeed when a subject hears himself being called a thief in the midst of thousands of street noises, to decide whether he experiences a hallucination or an illusion. The certainty is, on the other hand, much greater when the morbid perception occurs in absolute silence, as during the night, for instance.

In the second case the diagnosis must be made without the assistance of the patient, or even in spite of his denials. It must be based only upon the patient's attitudes, movements, and at times upon the means of

defense to which he resorts and which vary according to the sense affected. The ear turned for some time in a certain direction, the eyes fixed or following a definite line without there being any real object to attract them, the ears stuffed with foreign bodies, evidences of strong emotions, an expression of fear, etc., lead to the presumption of the existence of hallucinations. I say *presumption* because the external signs do not enable us to establish with certainty the patient's state of consciousness. Over-refined psychological analyses are to be mistrusted if one is to avoid unwarranted conclusions which would render the diagnosis and prognosis faulty.

Relations between hallucinations and other mental disorders. — What position do hallucinations occupy in the genesis of the psychoses? Are they primary or secondary?

It is not impossible that at times, notably in the intoxications and in cases of localized lesion, hallucinations appear first and are the cause of the other mental disturbances which follow. In practice, however, such cases occur but rarely. A careful and complete history almost always shows that the hallucinations are preceded by other symptoms: depression, intellectual obtuseness, clouding of consciousness, delusions, etc.

Indeed it is difficult to conceive of one or more hallucinations appearing in an individual free from all other mental trouble, without their being at once corrected by the judgment aided by the other senses. On the other hand it is quite intelligible that imaginary perceptions may exercise an influence upon the attention, the emotions, the judgment, and the will, if they are but the reflection or the realization of the patient's

pre-occupations and morbid ideas, that is to say, if they are secondary. The melancholiac who believes himself guilty of a crime sees and hears the police officers who are coming to arrest him. The persecuted patient who believes himself to be exposed to the malevolence of his imaginary enemies hears their voices insulting him. The general paretic with pleasing and expansive delusions experiences pleasant sensations. Hallucinations are, then, the *expression, and not the cause,* of delusions; and that is why they harmonize so perfectly with the mental state of the subject.

Some alienists [1] have described a *hallucinatory delirium* as a distinct morbid entity the essential features of which are the multiplicity and the primary character of the hallucinations. If the idea which I attempted to expose above is correct, hallucinations, never or almost never being primary, cannot form the essential and exclusive feature of an affection, and hallucinatory delirium cannot retain its autonomy. For this reason most authors classify such cases with confusional insanity, general paresis, dementia præcox, and the toxic psychoses.

General etiology of hallucinations. — On this subject we possess but very incomplete information.

Hallucinations appear readily in states of impaired consciousness, as epileptic delirium and the toxic psychoses. The hallucinations which precede sleep in certain nervous subjects are most frequently of the conscious type and are to be attributed to weakening of consciousness.

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[1] Farnarier. *La psychose hallucinatoire,* Paris, 1899.

Hallucinations are very apt to appear in the absence of real sensations, — those of hearing during silence and those of vision in darkness. This explains why isolation in prison-cells, practiced in penitentiaries, predisposes to hallucinatory psychoses (Kirn, Rüdin).[1]

In some instances hallucinations are produced in a somewhat automatic manner, at the occasion of some definite impression. One patient felt a taste of sulphur in his mouth whenever the name of one of his persecutors was uttered in his presence. Such hallucinations have been described by Kahlbaum under the name of *reflex hallucinations.*

Hallucinations may depend to a certain extent upon a peripheral excitation either of the sensory organ itself or of the conducting nerve. They are in such cases frequently *unilateral.* "Max Busch has brought about a notable improvement in the mental condition of a patient who had auditory hallucinations which were most marked on the left side, by treating his otitis media with perforation of the drum membrane, which he had contracted during childhood."[2] Visual hallucinations have been observed to appear as the result of ocular lesions, such as cataract, and to disappear under appropriate treatment. These peripheral lesions are, so to speak, but a pretext for the hallucinations, and are not to be considered as their true cause. The cause is to be looked for in the special state of morbid irritability of the centers of perception which causes

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[1] Rüdin. *Eine Form akuten hallucinatorischen Verfolgungswahns in der Haft,* etc. Allg. Zeitschr. f. Psychiat., 1903.

[2] Quoted by Legay. *Essai sur les rapports de l'organe auditif avec les hallucinations de l'ouïe.* Thèse de Paris, 1898, p. 25.

them to react by hallucinatory phenomena to abnormal peripheral excitation.[1] Hallucinations sometimes occur in cases in which the corresponding sensory function has been lost completely. Thus auditory hallucinations may be associated with total deafness, unilateral or bilateral.

Peripheral hallucinations are very analogous to Liepmann's phenomenon: if in a convalescing alcoholic slight pressure is made upon the eyeballs, hallucinations are sometimes induced, even when the subject does not any more experience them spontaneously. The peripheral excitation transmits to the brain nothing but a nervous discharge the clinical expression of which is the hallucination. The fact that a great many patients present very grave and old standing lesions of the sensory organs without having any hallucinations is also evidence to prove that these affections are of but secondary importance in the causation of psychosensory disorders.

Finally, hallucinations may be induced by *suggestion*. Sometimes it suffices merely to fix the attention of the patient upon a certain point for him to discover imaginary objects, persons, or forms. Such is frequently the case in toxic states, notably alcoholism and cocainomania, also in certain dementias. In an observation kindly communicated to me by Thivet, a patient read whole words upon a blank surface that was presented to him.

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[1] Joffroy. *Les hallucinations unilatérales.* Arch. de neurol., 1896, No. 2. — Mariani. *Un cas d'hallucination unilatérale.* Riforma medica, 1899, Nos. 30 and 31.

B. SPECIAL FEATURES OF EACH VARIETY OF HALLUCINATIONS.

Hallucinations of hearing. — In pathological states, as in the normal state, auditory sensations occupy a position of primary importance among the psychic functions; thus, of all hallucinations those of hearing are clinically the most frequent and the most important.

Séglas[1] classifies them in three categories: "*Elementary* auditory hallucinations, consisting of simple sounds; *common* auditory hallucinations, consisting of sounds referable to definite objects; and finally *verbal* auditory hallucinations, consisting of words representing ideas."

Wernicke[2] combines the first two categories under the name of *akoasms*, and designates the third, the only one that seems to him to merit separate consideration, by the name of *phonemes*.

Akoasms comprise imaginary noises of a variable nature, such as buzzing, whistling, screaming, groanings, ringing of bells, explosions of firearms, etc. Their clinical significance is the same as that of hallucinations in general, and their influence upon the mind depends upon their interpretation by the patient.

Phonemes (the verbal auditory hallucinations of Séglas) have on the contrary a special significance, inasmuch as they consist of "words representing ideas." Their influence is much more direct and much more powerful than that of akoasms.

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[1] *Leçons cliniques sur les maladies mentales et nerveuses*, p. 5. — *Pathogénie et physiologie pathologique de l'hallucination de l'ouïe.* Congrès des médecins aliénistes et neurologistes, 1897.

[2] *Loc. cit.*, p. 189.

Their content varies from isolated words to the most complicated discourses. Sometimes the words or phrases are pronounced indistinctly, resembling a faint murmur; at other times they are perceived with remarkable clearness. "It seems to me," patients often say "that somebody is speaking very near me. . . I hear my enemies as well as I hear you." This distinctness largely accounts for their being accepted as real voices, and explains partly the remarkable influence of auditory hallucinations.

The "invisible ones," as the patients often call the imaginary voices, are sometimes localized with extraordinary precision. "The insane manifest a power of localization not encountered in other than pathological states."[1] The distance at which they believe they hear the voices is very variable; the voices may be very close by or, on the contrary, hundreds of miles away. Many patients hold the persons that are around them responsible for the hallucinations; thus are explained some of the sudden assaults often committed by such patients. Others ascribe their hallucinations to inanimate objects. One patient accused her needle, another her stockings. Still others lay the blame upon invisible instruments which are used by their enemies (phonographs, telephones, megaphones, etc.).

Like all other hallucinations, those of hearing vary with the nature of the mental trouble: sad in the painful states, agreeable and cheerful in the expansive states. Usually the names by which the patients designate the "invisible ones" are not very choice ones,

[1] Wernicke. *Loc. cit.*, p. 205.

consisting chiefly of profane or even filthy expressions. Unpleasant hallucinations may alternate with agreeable ones in the manner of *attack* and *defense*, as has already been stated. Sometimes each of the two varieties of hallucinations is perceived by only one ear.

The voices may repeat the thoughts of the patient, even before he has a chance to express them. "They know before I do what reply I wish to make," said one such patient. Another said: "When I read they read at the same time and repeat every word." Many complain that their thoughts are stolen from them.[1]

Quite often the voices create neologisms the meaning of which may remain absolutely enigmatical to the patient himself, or to which he may attribute a significance which harmonizes with his psychical state.

The timbre of the voices is very variable. In some cases the patient always perceives one and the same voice; but more frequently many voices are heard: voices of men, women, and children, which are sometimes unknown to the patient, at other times familiar, enabling him to establish the identity of his persecutors.

Although they are encountered in a great many mental affections, acute and chronic, hallucinations of hearing, if they constitute a prominent feature by reason of their multiplicity, distinctness, or intensity, usually point to a grave prognosis. Their occurrence in an acute psychosis often forebodes a particularly long duration of the disease.

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[1] Bechterew. *Ueber das Hören der eigenen Gedanken.* Arch. f. Psychiatrie, Vol. XXX.

Hallucinations of sight. — Hallucinations of sight chiefly occur in toxic and febrile deliria and in certain neuroses (hysteria, epilepsy, chorea).

They vary greatly in distinctness. At times they are so clear that the patient is able to make a sketch of them; often they are, on the contrary, vague and uncertain.

Like the *voices*, the *visions* are apt to be taken for reality by the subject; he seeks to remove them, to shun them, or on the contrary to seize them. They are in such cases coupled with a more or less marked clouding of the intellect.

Many patients, on the contrary, consider their hallucinations as *artificial phenomena.* The more conscious and the clearer in mind the patient is, the more apt he is to recognize the difference between the real world and his visions, because, with the exception of the cases in which the consciousness is profoundly disordered, visual hallucinations "seldom bear the appearance of reality."[1] They lack the proper qualities of normal visual sensations: perspective, clearness of contour, variety of tints, etc. Often the morbid image appears in a single plane, hazy in outline, and grayish in color. It is therefore not surprising that, not possessing the attributes of true perceptions, visual hallucinations are often not taken for reality, and do not exercise upon the mind of the patient the same degree of influence as do phonemes.

Some patients consider their hallucinations as shadows or images *which they are made to see artificially* by means of projecting apparatus, electric currents, etc. Others

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[1] Wernicke. *Loc. cit.*, p. 194.

attribute them to the pernicious action of poisons which their enemies make them absorb.

Visual hallucinations may take the form, though rarely, of verbal hallucinations of vision. The patients see words and phrases written on tables, walls, etc. A subject of choreic insanity whom I have observed in Joffroy's clinic saw her own name written on her apron. Everybody is familiar with the famous words *Mene, mene, tekel, upharsin,* which the guests saw appear upon the wall at Belshazzar's feast.

Hallucinations of taste and smell. — The senses of taste and smell are as closely associated in pathological states as they are in the normal state. Therefore hallucinations of these senses are usually considered together.

Their clinical significance varies, depending upon whether they coexist with psychic and somatic disorders of an acute nature, or whether they appear in the course of a chronic psychosis.

In the first case they often result from the dryness and the inflammation of the nasal and buccal mucous membranes or glands. They disappear with the disturbances of these glands, and they may be modified very favorably by appropriate treatment. Their importance with regard to the prognosis in such cases is very slight.

It is altogether different in the second case, when they supervene independently of the above causes in the course of chronic affections. They almost always indicate a profound alteration of the personality and the progress of the mental disorder towards dementia.

Hallucinations of taste and smell are mostly unpleas-

ant. The patients complain of nauseating odors; putrid emanations are *blown* towards them; they are made to eat fecal matter; poisons are poured into their mouth, etc. They make use of certain means of defense, such as spitting, stuffing the nostrils with cotton or paper, and, what constitutes a very grave symptom, *refusal of food.*

Hallucinations of touch, of the thermal sense, and of the sense of pain. — These are often placed in a single group under the name of *hallucinations of general sensibility.*

Hallucinations of *touch* are frequent in certain toxic psychoses (delirium tremens, cocaine delirium), and in chronic delusional states. The patients feel the breath of somebody or the contact of something; they feel as though spiders are crawling upon their bodies, or they may have a sensation of being bound in an entangled mass of cords.

Closely related to the above are hallucinations of the *genital sense,* which are encountered in neuroses, chiefly hysteria, in mania, and in a great many other acute and chronic psychoses. They consist of either painful or voluptuous imaginary sensations. When they co-exist with perfect mental lucidity they generally indicate a very grave prognosis.

Hallucinations of the *thermal sense* and of the *sense of pain* are a feature of chronic delusional states. The patients complain of being burned alive, that their body is being pierced with a red-hot iron, that they are being thrown off from their chair, that they are made to experience shocks like those of electric discharges, etc.

Motor hallucinations.— A motor hallucination may be defined as an imaginary perception of a movement. It

constitutes a disorder of that kind of sensibility which has been designated by the term muscular sense.

Analogous phenomena are encountered in normal individuals; the sensation of heaviness or of lightness of the limbs, which we experience during sleep, are justly attributed by Beaunis[1] to disturbances of the muscular sense; the *illusions referred to an amputated limb* are often accompanied by motor hallucinations.

Motor hallucinations are frequent among the insane. Some feel themselves being raised from their bed, being shaken continually against their will, etc. Others, like the mediæval sorcerers, imagine themselves flying in the air.

By a well-known psychological process the sensation tends to transform itself into an act, the motor image into a movement. *The motor hallucination becomes an impulse.* The patient feels with astonishment that his limbs, his tongue, or his mouth become the seat of movements in which his will takes no part. A patient of Krishaber's, for instance, felt his legs "move as though endowed with a power other than that of his own will." Many of the persecuted or mystic patients affirm that they have been transformed into automatons, and that God or their enemies, as the case may be, make them go and act as they wish.

There is a certain form of motor hallucinations which deserves particular attention by reason of its frequency, its clinical importance, and its high psychological interest; these are the *verbal* motor hallucinations which have been admirably described by

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[1] *Les sensations internes*, 1889, Paris, F. Alcan.

Séglas.[1] As their name indicates, they affect the function of speech. The patient is conscious of involuntary movements of his tongue and lips, identical with those which produce articulation of words. The sensation may exist alone or it may acquire such intensity that it is transformed into actual motion, and the patient begins to speak in spite of himself. Often the pathological movements are scarcely apparent, being limited to an inaudible whisper. Sometimes the impulse is so strong that it results in loud talking or screaming. The remarks made by the patient in such a case may be entirely discordant with his true sentiments. In this way such patients may unintentionally insult their relatives, making use of obscene language, blasphemies, etc. At other times the thoughts of the patient are spoken out in spite of himself. Pierracini has termed this phenomenon "the escape of thought." (Quoted by Séglas.)

Verbal motor hallucinations exercise upon the function of speech, even in those cases in which they do not reach the stage of actual articulatory movements, so powerful an inhibitory influence that the subject becomes totally unable to speak. This is in perfect accord with the observation of Stricker, who found that two verbal motor images cannot exist at the same time. Already occupied by the hallucinatory motor image, the consciousness remains closed to normal motor images. Verbal motor hallucinations are thus a *cause of mutism.*

Graphic motor hallucinations affect written speech.

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[1] *Leçons cliniques.* Also *Les troubles du langage chez les aliénés.* (Bibliothèque Charcot-Debove.)

" The graphic image then comes into play, and in consequence of the morbid irritability of the special cortical centre for written speech the patient has the exact perception of a word with the aid of the representations of the co-ordinate movements which would accompany it if he were really writing the word." [1]

When this morbid irritation attains a certain degree of intensity the hallucination becomes a *graphic impulse* and gives rise to *automatic writing*, which is often met with in the " writing mediums."

The interpretation of motor hallucinations varies in different patients. Some complain that their enemies govern their tongues by means of invisible wires. Others, feeling themselves no longer masters of their own organs, are naturally led to think that a strange personality has become established alongside of themselves. Some of the " possessed " of the mediæval times undoubtedly had motor hallucinations.

Motor hallucinations generally involve a grave prognosis. They indicate an already advanced disaggregation of the personality. Therefore they are chiefly encountered in the chronic psychoses; they may appear, however, in certain acute psychoses, such as melancholia (Séglas) and alcoholic delusional insanity, (Vallon, Cololian).[2]

Theories of hallucinations. — I shall but mention the so-called psychological theory, according to which hallucinations are supposed to be a phenomenon purely of ideation. Physicians and physiologists have long ago

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[1] Séglas. *Les troubles du langage*, p. 246.

[2] Cololian. *Les hallucinations psycho-motrices verbales dans l'alcoolisme.* Arch. de Neurol., Nov. 1899.

abandoned this theory. But though all authors to-day admit the existence of a material pathological process as the foundation of hallucinations, they are far from being in accord as to its nature and as to its seat.

Jean Muller is of the opinion that hallucinations are the consequence of abnormal irritation of the peripheral sensory organ.

According to Meynert they result from the automatic activity of the subcortical cerebral centers, which are no longer inhibited by the cerebral cortex as they are in the normal state.

The primary cause of hallucinations would thus be a suppression of the inhibitory power of the cortex, which is one of the manifestations of cortical paralysis. The hallucination is then the consequence of a supremacy of the inferior cerebral functions over the higher ones.

Finally, according to Tambourini, whose opinion is to-day the most widely accepted one, hallucinations are produced by the *automatic activity of a psycho-sensory projection-center.*

Under what conditions does the automatism of the projection-center come into play? Is it under the influence of direct irritation resulting, for instance, from a tumor or from a circumscribed patch of meningitis localized exactly at this center? Such cases occur. Sérieux [1] has observed verbal motor hallucinations in a general paretic in whose case the autopsy showed a predominance of the lesions of meningo-encephalitis at the level of the lower portion of the left third frontal

[1] *Sur un cas d'hallucination motrice verbale chez une paralytique générale.* Bull. de la soc. de méd. ment. de Belgique, 1894.

convolution. The lesion must not, however, be a too destructive one. "Indeed, for a center to be able to produce hallucinations, it is necessary that conditions of integrity be preserved sufficient to permit its activity" (Joffroy).[1]

Most frequently, however, the center of projection is not the seat of any demonstrable lesion. It seems, then, that in most cases the hallucinations are the consequence, not of a direct irritation of the psychosensory center itself, but rather of an indirect irritation coming from another portion of the cortex. This explains why hallucinations are always a secondary phenomenon, and why they are but an expression, a reflection of the pathological preoccupations of the patient.

Wernicke has conceived a very ingenious theory of hallucinations, founded upon his general hypothesis of *sejunction*. By this term he designates a temporary or permanent interruption of the paths followed normally by a nervous impulse. This impulse cannot pass on freely, and accumulates above the point of the lesion like the water in a river above a dam. When this accumulation occurs in a psychosensory projection-center it sets up there a state of abnormal irritation of which the clinical expression is a hallucination.

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[1] *Les hallucinations unilatérales.* — Siebert has also reported a case in which very pronounced hallucinations of the sense of smell persisted for a long time and subsequently disappeared by degrees. At the autopsy the hippocampus was found to be destroyed by a tumor. The author supposes that the hallucinations were caused by irritation of the center in question by the growth, and that they did not cease until this center was destroyed. (Monatschr. für Psych. u. Neurol., Vol. VI.)

CHAPTER III.

SYMPTOMATOLOGY (*Continued*).

CONSCIOUSNESS. — MEMORY. — VOLUNTARY ASSOCIATION OF IDEAS. — ATTENTION. — AUTOMATIC ASSOCIATION OF IDEAS. — JUDGMENT.

§ 1. Disorders of Consciousness.

Consciousness may be lost: *unconsciousness;* or weakened: *clouding of consciousness*; or exaggerated: *hyperconsciousness.*

Unconsciousness and clouding of consciousness. — *Unconsciousness* exists physiologically in dreamless sleep, and pathologically in coma and in complete stupor.

Clouding of consciousness represents the fundamental element of many psychoses. It is always coupled with more or less complete *disorientation.*

A complete orientation implies the integrity of the following three notions:

1. The notion of our own personality (autopsychic orientation of Wernicke);

2. The notion of the external world (allopsychic orientation of the same author);

3. The notion of time.

These three notions may disappear together or singly. We shall see later that in certain affections,

notably in delirium tremens, the orientation of time and place is lost, while that of personality remains intact. The patient is ignorant of the fact that he is in a hospital ward, does not appreciate his surroundings, and cannot give even approximately the real date. But he knows that he is Mr. X., following such and such an occupation, so and so many years old, born on such and such a day, etc.

Allopsychic disorientation, or loss of the notion of the external world, is often coupled with many hallucinations. Some authors see in the two symptoms a causative relation; the hallucinations transport the patient to an imaginary world, thus making him lose the notion of the real world. Experience does not bear out this hypothesis: 1) because the orientation may be perfectly preserved in spite of intense and unceasing hallucinations; 2) because, inversely, it may be profoundly disordered without there being hallucinations of any kind; 3) because in most of the cases in which these two symptoms are associated the disorientation precedes the psychosensory disturbances.

Influence of enfeeblement of consciousness upon the emotional state and upon the reactions.—Unconsciousness and clouding of consciousness find expression, in the emotional sphere, in indifference and dullness; and, in the psychomotor sphere, in aboulia which in extreme cases may amount to complete inaction.

If complicated by symptoms of excitement, hallucinations and illusions, delusions, or anxiety, clouding of consciousness is accompanied by emotional phenomena and reactions characteristic of these symptoms. It is important to remember above all that the disorder

of consciousness may impart to the reactions of the patient a more or less impulsive character; hence their brutal and sometimes ferocious nature.

Diagnosis of enfeeblement of consciousness.—Unconsciousness is generally apparent from the absolute indifference of the subject who fails to react even to the strongest stimulation. However, it is necessary to exercise great caution in many cases. We shall see later on that certain patients, the *catatonics*, present every appearance of unconsciousness and may nevertheless preserve perfect lucidity; the disorder of consciousness is here only a seeming one. Often one is obliged to wait before coming to a decision; when the attack passes off, the patient himself may tell of his former condition, either declaring that he has no recollection of what passed during the attack,—in which case the unconsciousness was real,—or explaining that, though perceiving the external impressions, he was unable to react,—in which case the unconsciousness was but a seeming one.

Clouding of consciousness is determined by putting to the subject a series of questions concerning his age, his occupation, the date, the surroundings, and the persons about him.

States of obscuration.—By this term are designated those pathological states in which lowered consciousness is the dominant feature. States of obscuration vary greatly in their aspect, and probably also in their nature. All, however, possess one feature in common: they leave behind almost complete amnesia for the occurrences that have taken place during their entire duration. But the degree of consciousness at the time of the attack

itself is very difficult to determine, and probably varies greatly.

Often patients afflicted with violent delirium have but an extremely confused notion of their surroundings, and their acts bear the character of complete automatism. Such are cases of epileptic delirium.

Others, on the contrary, perform complicated acts, such, for instance, as are involved in a long voyage, in a sober and reasonable manner and without attracting anybody's attention; and still they may have no subsequent recollection of these acts. This occurs in certain *pathological absences* which are most commonly observed in epilepsy but which may also be encountered in various psychoses.

It can scarcely be assumed that in these two cases the disorders of consciousness are identical.

Exaggeration of consciousness. — Morselli distinguishes two kinds of hyperconsciousness: "Hyperconsciousness with diffuse introflection, when the self-consciousness is referred to organic phenomena, as in melancholiacs, hypochondriacs, and paranoiacs, giving rise to illusions and hallucinations of general sensibility and of cœnæsthesia; and hyperconsciousness with concentrated introflection, when representations are perceived and emotions experienced with an abnormal intensity: hence the ecstasy of spontaneous or induced (hypnotic) hallucinatory states."[1] Generally hyperconsciousness is but partial: certain sensations or certain representations absorb the conscious psychic activity to the partial or complete exclusion of others.

[1] Morselli. *Loc cit.*, p. 754.

§ 2. Disorders of Memory.

An act of memory comprises three distinct operations:

1. The fixation of a representation;

2. Its conservation;

3. Its revival, that is to say, its reappearance in the field of consciousness.

These may be disordered together or singly; hence the three forms of amnesia:

A. Amnesia by default of fixation (or simply amnesia of fixation), also known as *anterograde amnesia;*

B. Amnesia of conservation;

C. Amnesia of reproduction.

The latter two affect impressions previously acquired and constitute *retrograde amnesia;* there are therefore two varieties of retrograde amnesia: 1) by default of conservation, and 2) by default of reproduction.

A. Amnesia of fixation. Anterograde Amnesia. — The power of fixation (*Merkfähigkeit* of German authors) is dependent upon the distinctness of the preceptions. Therefore all conditions in which perceptions are vague and uncertain are accompanied by a more or less marked amnesia of fixation; such is the case in epileptic deliria and in acute confusional insanity.

Distinctness of perception is therefore a condition necessary for the normal working of memory; it is, however, not in itself a sufficient condition. An impression, though very clear and very precise at the moment, may not fix itself upon the mind. Thus a patient having the polyneuritic psychosis may understand perfectly the questions put to him, execute properly the orders that are given him, so that on a superficial

examination he may convey the impression of a normal individual; still he preserves but an incomplete recollection, or none at all, of the occurrences of the whole period of his illness. It seems, then, that for proper fixation is required, besides sufficient distinctness of perception, some other condition the nature of which is as yet undetermined.

B. Retrograde amnesia by default of conservation.— An impression fixed in memory is preserved for a greater or lesser length of time, depending upon its nature and upon the individual capabilities of the subject. The memory of an important event persists longer than that of an insignificant one. Certain individuals possess a prodigious memory, others a very poor one or almost none at all; between these two extremes there are infinite gradations.

The disappearance, under the influence of some pathological cause, of impressions previously acquired, constitutes what we have termed *amnesia of conservation.* This *destructive,* and consequently *incurable,* form of amnesia is the principal factor of certain types of dementia, and is often the first sign that warns the patient's relatives of the beginning condition.

The disappearance of impressions may be more or less complete, depending upon the nature of the dementing process. While many precocious dements for a long time preserve a relatively good memory, general paretics and senile dements present from the beginning of their illness very marked amnesia.

Amnesia of conservation is generally associated with the other two forms of amnesia: amnesia of fixation and amnesia of reproduction.

C. Retrograde amnesia by default of reproduction.—In the normal state, an impression fixed and preserved in the memory possesses the property of being revived under certain conditions. In pathological conditions this power of reproduction may be suspended: the impressions exist, but they are dormant and cannot be revived. This form of amnesia is encountered in many acute psychoses, notably in manic depressive insanity, in acute confusional insanity, and in the toxic psychoses. Its prognosis is of course much more favorable than is that of the preceding form.

The course of amnesia.—The *onset* may be sudden or insidious; it is often sudden in amnesia of reproduction, —pure or associated with amnesia of fixation,—and almost always insidious in amnesia of conservation.

Amnesia may be *stationary*, *retrogressive*, or *progressive;* it is stationary when, certain impressions having become destroyed, the defect persists without increasing; retrogressive when the impressions, simply dormant, reappear little by little; and progressive when, as the pathological process advances, the number of destroyed impressions becomes greater from day to day.

In progressive amnesia the disappearance of impressions occurs not at random, but in a definite order. "The progressive destruction of memory follows a logical course, a law. *It descends progressively from the unstable to the stable:* it begins with recent impressions which, fixed imperfectly upon the nervous elements, seldom repeated and therefore but feebly associated with others, represent the organization in its weakest degree; it ends with that instinctive, sensory memory which, stably fixed in the

organism and having become almost an integral part of it, represents the organization in its strongest degree. From the beginning to the end the course of amnesia, governed by the nature of things, follows the line of least resistance, that is to say, the line of least organization." [1] In senile dementia, in which the law of amnesia is most perfectly demonstrated, the impressions of old age are the first to become effaced, later those of adult life, and finally those of youth and childhood. Some of the latter may remain intact long after the general ruin of the memory and of the other intellectual faculties. It is not uncommon to meet with advanced senile dements who, though incapable of recollecting the existence of their wife and children, are still able to relate with minute details the occurrences of their childhood or to recite correctly fragments from the works of classic authors.

The law of amnesia, though always the same, is difficult to demonstrate in those affections in which the enfeeblement of memory progresses very rapidly, where many impressions, like other manifestations of intellectual life, disappear *en masse*. In general paresis the course of amnesia is much more rapid and much less regular than in senile dementia. This fact, as we shall see, is an important element in diagnosis.

Varieties of amnesia.—Amnesia is said to be *partial* when it involves only one class of impressions, for instance proper names, numbers, certain special branches of knowledge (music, mathematics), or a

[1] Ribot. *The Diseases of Memory.*

foreign language. A young man coming out of a severe attack of typhoid fever forgot completely the English language, which he had spoken fluently before the onset of his illness. Other impressions were quite well preserved. When it involves verbal images the amnesia determines a particular form of aphasia, *amnesic aphasia.*

Amnesia is *general* when it affects equally all classes of impressions. Most of the progressive amnesias are general.

Amnesia may be *limited to a certain period of existence.* In such cases its onset is almost always sudden, and it is either anterograde, or retrograde by default of reproduction.

Localization of recollections.—A recollection of an occurrence, once evoked, is usually easily localized by us as to its position in the past. This power of *localization* disappears in certain psychoses. The patients cannot tell on what date or even in what year some fact occurred, an impression of which they have, however, preserved. The default of localization in the past combined with a certain degree of anterograde and retrograde amnesia produces *disorientation of time.*

Illusions and hallucinations of memory.—In an illusion of memory a past event presents itself to the consciousness altered in its details and in its relation to the patient, and exaggerated or diminished in importance. Thus one senile dement claimed to have superintended the construction of a Gothic cathedral several centuries old, holding, as he said, "the calipers in one hand and the musket in the other to defend myself against the Saracens." Upon inquiry it was

found that the patient had really worked about thirty years previously on the restoration of an old cathedral.

An illusion of memory becomes a true hallucination when the representation perceived as a recollection does not correspond to any actual past occurrence. A patient who had been in bed during several weeks related once that on the previous day he assisted at the coronation of the Russian emperor: this is a representation without an object, an hallucination of memory.

Illusions and hallucinations of memory form the basis of *pseudo-reminiscences*[1] which are met with in many psychoses, especially in hysteria and in the polyneuritic psychosis.

Pseudo-reminiscences are not infrequent in certain persons who are usually not classed with psychopaths. In such cases the hallucinations and illusions of memory occur on a basis of abnormally vivid mental images which an inadequate auto-critique fails to correct.

In some of the insane, pseudo-reminiscences occur in such abundance as to constitute the principal symptom of the disease. Thus one feeble-minded patient imagines himself to have participated in all the important historical events of his epoch, particularly in the great military actions. He has taken part successively in the campaigns of Tonquin, Madagascar, and Dahomey, also in the Spanish-American war and in the Boer war, serving in different grades, — now as corporal, now as sergeant-major, now as colonel. During all this time he has had several conferences with the

[1] Delbrück. *Die pathologische Lüge und die psychisch abnormen Schwindler.* — Koeppen. *Ueber die pathologische Lüge* (Pseudologia phantastica). Charité Annal. Jan. 1898.

German emperor, also with the empress, his cousin. When his reminiscence bears upon some historical event the patient gives details culled from the magazines or from popular books, and relates them with a degree of accuracy which indicates a good memory.

I shall mention lastly a curious form of illusion of memory, which has been designated by the name of illusion of having already seen. "It consists in a belief that a state of consciousness that in reality is new was experienced before, so that when it first occurs it is thought to be a repetition." [1] One patient claimed that all the occurrences which he was witnessing had taken place a year previously, day by day. He made a great deal of noise at the marriage of one of his sisters, demanding to know why a ceremony which had already been performed a year ago was begun over again, and protesting that it was like a farce.[2]

Exaltation of memory (Hypermnesia). — This consists in the reappearance in consciousness, owing to some accidental or pathological influence, of impressions which have apparently become completely obliterated.

Hypermnesia may be general or partial.

General hypermnesia is met with in certain cases of mania; sometimes at the onset of general paresis; following the shock of violent emotions, — as in the case of the man mentioned by Forbes Winslow,[3] who at the point of being crushed by a train had all the events

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[1] Ribot. *Loc. cit.*

[2] Arnaud. *Un cas d'illusion du déjà vu ou de fausse mémoire.* Ann. méd. psych., May–June, 1896.

[3] Quoted by Ribot. *Loc. cit.*

of his life pass through his mind in a sort of mnemonic panorama; — and finally, it is said, in the dying, preceding the lethal agony.

Partial hypermnesia involves isolated and restricted impressions or groups of impressions, — for instance, certain forgotten languages. Such is the case of the German and Swedish emigrants, mentioned by Rush,[1] who at the moment of death prayed in the language of their youth, in which they had not spoken for sixty years.

§ 3. Attention and Association of Ideas.

Disorders of attention. — Attention manifests itself in two forms: *spontaneous* and *deliberate* or *voluntary*. Spontaneous attention, the inferior and less complex of the two forms, consists "in a direction of the being toward the stimulus" or "in a simple and spontaneous fixation of phenomena." Deliberate attention directs the association of ideas; governs the course of representations, allowing each to remain for a greater or lesser length of time in the field of consciousness; in other words, it brings about voluntary and conscious psychical activity.

Complete paralysis of attention involves loss of spontaneous attention as well as of voluntary attention. It coexists always with considerable weakening of consciousness, there being no possibility of the production of any state of consciousness without a certain degree of at least spontaneous attention.

Abnormal mobility of attention consists in paralysis

[1] Quoted by Ribot. *Loc. cit.*

of deliberate attention, spontaneous attention being intact and in most cases even exaggerated. An impression of any kind suffices to distract the mind of the subject, but no impression can fix it. This phenomenon is well illustrated by the following experiment. A maniac was asked to tell about the death of his mother, which, incidentally, was the cause of his illness. He began: "The poor woman came home from her work in the evening. She was taken with a chill. . ." One of the assistants picks up a pencil from the table in front of the patient. "Hold on! there is a pencil, a blue pencil. . . Can you draw?" Another assistant begins to cough. "If you have a cough you should take Geraudel's tablets. . . You know, spitting on the floor is prohibited. . . That's a fact. . ." The first assistant unbuttons his coat. "I hope you are not going to undress here, that would be improper! . . ." Noticing a small rent in the vest of the same assistant: "I guess you have no wife to do your mending! . . ." This example shows how the mind, deprived of the guidance of voluntary attention, drifts at the occasion of various external impressions without ever becoming fixed.

Disorders of association of ideas. — Associations are of two kinds: *voluntary* and *automatic*. Voluntary associations are under the control of attention and are effected in a special order which is determined by a principal idea termed the *guiding idea*. Automatic associations are, on the contrary, produced spontaneously and without any predominating idea. They constantly threaten to deviate the course of voluntary associations; one of the principal functions of deliberate attention consists in inhibiting automatic associations.

Weakening of attention is closely connected with *sluggish formation of voluntary associations.* This latter symptom is manifested clinically by slowness of apprehension, and experimentally by lengthening of reaction-time, that is to say the time required for a sensation to be transformed into a voluntary and conscious movement.[1]

Weakening of attention and sluggishness of voluntary associations constitute the earliest and most constant manifestations of psychic paralysis. Combined with insufficiency of perception and with a more or less pronounced disorder of consciousness, they bring about *mental confusion,* a syndrome which may occur as an episode in the course of a great many mental diseases and as a permanent manifestation of an affection known as primary mental confusion.

The intensity of this state may be of three degrees:

1st degree: diminished capacity for intellectual exertion, rapid fatigue;

2d degree: intellectual dullness;

3d degree; complete suspension of all voluntary intellectual activity.

Weakening of attention and sluggishness of association may exist alone, as in certain forms of melancholia, and especially in stupor, in which they attain their highest degree. They may also be associated with exaggerated activity of the mental automatism, which manifests itself by an abnormal mobility of attention and by a flow of incongruous ideas (flight of ideas, incoherence), or, on the contrary, by the ap-

[1] Pierre Janet. *Névroses et idées fixes,* Paris, F. Alcan. — Sommer. *Lehrbuch der psychopathologischen Untersuchungsmethoden,* 1899.

pearance in the field of consciousness of some particularly tenacious and exclusive representation (imperative idea, fixed idea, autochthonous idea).

Flight of ideas. — Incoherence. — These two symptoms constitute two different degrees of the same morbid process.

Flight of ideas, almost always dependent upon an abnormal mobility of attention, consists in a rapid succession of representations which appear in the field of consciousness without any order, at the occasion of external impressions, superficial resemblances, coexistences in time or space, similarities of sound, etc. One word arouses the idea of another of a similar sound or having the same termination (association by assonance). The following example from a case of a maniac, whose discourse during several minutes was copied verbatim, will show, better than a description could, the character of this pathological phenomenon:

"Now I want to be a nice, accommodating patient; anything from sewing on a button, mending a net, or scrubbing the floor, or making a bed. I am a jack-of-all-trades and master of none! (Laughs; notices nurse.) But I don't like women to wait on me when I am in bed; I am modest; this all goes because I want to get married again. Oh, I am quite a talker; I work for a New York talking-machine company. You are a physician, but I don't think you are much of a lawyer, are you? I demand that you send for a lawyer! I want him to take evidence. By God in Heaven, my Saviour, I will make somebody sweat! I worked by the sweat of my brow! (Notices money on the table.) A quarter; twenty-five cents. In God

we trust; United States of America; Army and Navy forever!"

Flight of ideas was formerly considered, especially in mania, the result of excessive activity of the normal intellectual function; it was believed that the patient, unable to express in words the ideas which crowd themselves into his consciousness, is compelled to leave out a large number of them, and that these omissions cause the disconnectedness of his discourse.

In reality this exaggerated activity affects only the automatic intellectual functions and is always associated with an enfeeblement of the higher psychic functions. The essential cause of the phenomenon is to be looked for in a weakness of attention: representation A cannot fix itself in consciousness and is immediately replaced by representation B, and so on.

While in flight of ideas the representations are still associated by their relations, which though superficial are yet real, in *incoherence* they follow each other without any even apparent connection. The following is a specimen of incoherent speech obtained from a case of dementia præcox: "What liver and bacon is I don't know. You are a spare; the spare; that's all. It is Aunt Mary. Is it Aunt Mary? Would you look at the thing? What would you think? Cold cream. That's all. Well, I thought a comediata. Don't worry about a comediata. You write. He is writing. Shouldn't write. That's all. I'll bet you have a lump on your back. That's all. I looked out the window and I didn't know what underground announcements are. My husband had to take dogs for a fit of sickness."

These few lines suffice to show the profound degree

of psychic disaggregation which is manifested by this phenomenon.

It is not uncommon for the two symptoms, flight of ideas and incoherence, to appear in succession, or even together, in the same subject, notably in cases of mania, in acute mental confusion, also, though less often, in dementia præcox.

Imperative idea. — Fixed idea. — Autochthonous idea.[1] — We have stated above that mental automatism may manifest itself by the appearance of an idea that is particularly tenacious and exclusive, occupying by itself the field of consciousness, from which nothing can dislodge it.[2]

The three forms in which this phenomenon may appear have been well defined by Wernicke.[3]

An *imperative idea* imposes itself upon the patient's consciousness against his own will; he recognizes its pathological character and seeks to rid himself of it. It is a parasitic idea, recognized as such by the patient.

A mother is haunted by the idea of killing her child whom she loves dearly. As she herself states, she can no longer think of anything else; but she recognizes it as a morbid phenomenon and begs to be relieved of it: this is an imperative idea.

A fixed idea, on the contrary, harmonizes with the other representations. Therefore it is never considered by the subject as foreign to the mind or as a pathological phenomenon.

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[1] Milne Bramwell. *On Imperative Ideas.* Brain, 1895. — Kéraval. *L'idée fixe.* Arch. de Neurol., 1899, Nos. 43 and 44.

[2] This form of mental automatism may be termed *monoideal automatism.*

[3] *Loc. cit.*, p. 108.

A mother who has lost her child is convinced that if she had given it a certain kind of medicine the child would not have died. This idea does not leave her, appears to her perfectly legitimate and natural: this is a fixed idea.

Fixed ideas form the basis of certain delusional states, notably that of paranoia. They are also the starting point of a great many hysterical episodes. In such cases they are often *subconscious*, that is to say, they exercise their influence without the patient's being conscious of their existence.

Fixed ideas are not found exclusively in cases of mental alienation; they are encountered in the normal state as certain tendencies that may be in themselves perfectly legitimate. Such are the desires for vengeance, ambition, etc.

Autochthonous ideas, like imperative ideas, are developed alongside of normal associations. The only difference is in the patient's interpretation of them; while the imperative idea is recognized by him as pathological, the autochthonous idea is attributed to some malevolent influence, most frequently to some strange personality. If he complains, it is to the police officer and not to the physician. A mother believes that her neighbor forces upon her the idea of killing her child: this is an autochthonous idea.

Closely related to imperative ideas, autochthonous ideas present a similar analogy to hallucinations; like hallucinations, they result from the automatic activity of a cortical center. But, instead of playing upon a psychosensory center, the morbid irritation occurs in a psychic center. Baillarger designated autochthonous

ideas by the term *psychic hallucinations.*[1] This term has lately fallen into disuse, perhaps undeservedly.

Nothing proves more conclusively the kinship of the two classes of symptoms than the frequent transformation of autochthonous ideas into auditory, motor, and occasionally even visual, verbal hallucinations. The analogy between autochthonous ideas and verbal motor hallucinations led Séglas [2] to consider the two phenomena as identical in their nature, the first being but a rudimentary form of the second. This opinion will appear somewhat exclusive if we take into consideration the fact that autochthonous ideas may engender auditory hallucinations [3] just as readily as motor hallucinations, and that in many cases they are not accompanied by even the slightest sensation of movement.

Psychic hallucinations generally indicate advanced disaggregation of the personality and therefore indicate a grave prognosis.

§ 4. Disorders of Judgment.

Judgment is the act by which the mind determines the relationship between two or more representations.

When the relationship is imaginary the judgment arrives at a false conclusion. This becomes a delusion when it is in conflict with evidence.

False ideas which patients often entertain concerning their own condition, believing their health to be perfect when in reality it is seriously affected, are to

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[1] Marandon de Montyel. *Des hallucinations psychiques.* Gaz. hebd. de Méd. et de Chirurgie, March, 1900.

[2] *Leçons cliniques sur les maladies mentales et nerveuses.*

[3] Wernicke. *Loc. cit.*

be attributed to impaired judgment [lack of insight]. This lack of appreciation of their own condition is not always absolute, and though in general it may be truly said that insanity is a disease which does not recognize itself, it must, however, be acknowledged that sometimes, chiefly at the onset of the psychoses, the patients are conscious of pathological changes taking place in them.[1]

Some apply to the physician of their own accord, or even request to be committed. A sufferer from recurrent insanity, treated several times at the Clermont Asylum, had at the beginning of his attacks such perfect realization of his state that he would request by telegram to have attendants sent after him.

General properties of delusions.—The sum of a patient's delusions constitutes a *delusional system.*

Such a system may consist of purely imaginary ideas, or of ideas based upon actual facts improperly interpreted.

In the latter case we have *delusional interpretations.* When the delusional interpretations involve occurrences of the past they are termed *retrospective falsifications.*

Sometimes a delusional state follows a dream, is confounded with it, and presents all the characteristics of it (*dream delirium*); this occurs in many infectious and toxic psychoses.

Almost always the delusions are multiple. Even in those cases which are sometimes designated by the term monomania, the primary morbid idea entails

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[1] Pick. *Ueber Krankheitsbewusstsein in psychischen Krankheiten.* Arch. f. Psychiat., Vol. XIII. — Heilbronner. *Ueber Krankheitseinsicht.* Allg. Zeitsch. f. Psychiat., Vol. LIV. No. 4.

a certain number of secondary morbid ideas which result from it. In some cases different delusional conceptions coexist without there being any connection between them, in others they are grouped so as to form a more or less logical whole possessing greater or lesser probability. In the first instance the delusions are said to be *incoherent*, in the second *systematized*.

Whether systematized or not, delusions, like hallucinations, generally harmonize with the emotional tone. This harmony disappears when the pathological process becomes abated in intensity, as the patient either enters upon his convalescence or lapses into intellectual enfeeblement. In dements the delusions often affect neither the emotions nor the reactions. A patient may claim that he is an emperor and at the same time agree to sweep the hall; or one may believe himself to have lost his stomach and still eat with a hearty appetite.

Three great categories of delusions are usually distinguished:

Melancholy ideas;
Ideas of persecution;
Ideas of grandeur.

We shall limit ourselves here to a brief sketch of these, reserving the details for consideration in connection with the affections in which the delusions occur.

Melancholy ideas. — Very common at the beginning of psychoses, melancholy ideas may persist through the entire duration of the disease, as in affective melancholia.

The principal varieties are:

(A) Ideas of humility and of culpability. The latter are also called ideas of self-accusation;
(B) Ideas of ruin;
(C) Hypochondriacal ideas;
(D) Ideas of negation.

A. Ideas of humility and of culpability. — The patient considers himself a being good for nothing, wretched, undeserving of the attention bestowed upon him, and accuses himself of imaginary faults or crimes. Often he will seek out from his past life some insignificant act to which he will attribute extreme gravity: he stole some apples when he was a boy, or he forgot to make the sign of the cross once upon entering a church. The idea of the crime committed entails also ideas of merited punishment: he expects every instant to be arrested, put to death, cut to pieces, thrown into hell, etc.

B. Ideas of ruin. — These are frequent in senile dements; the patient believes himself to be without any means, bereft of everything; his clothes will be sold; some day he will be found dead of starvation on a public road.

C. Hypochondriacal ideas. — These concern the subject himself, involving either the physical sphere — the stomach is obstructed, the spinal marrow is softened, the entire organism is affected by an incurable disease — or the psychical sphere constituting psychical hypochondriasis: the mind is paralyzed, the intelligence is destroyed, the will power is annihilated.

Hypochondriacal ideas are sometimes dependent upon an actual diseased condition which, however, is falsely interpreted by the patient (*Hypochondria cum materia*).[1]

D. Ideas of negation.[2] — In some cases these concern the subject himself, and are then nothing but hypochondriacal ideas pushed to an extreme: the brain, the heart, etc., are destroyed, the bones are replaced by air, the body is nothing but a shadow without a real existence. In other cases they are referred to the external world: the sun is dead, the earth is nothing but a shadow, the universe itself exists no more (metaphysical ideas of negation).

By a singular process, apparently paradoxical, hypochondriacal ideas and those of negation give rise to ideas of immortality and of immensity. The patient, feeling himself, on account of the destruction of his organs, placed beyond the laws of nature, concludes that he cannot die, and that he is condemned to suffer eternally; or, dismayed by the form and monstrous dimensions of his body, he imagines himself obscuring the atmosphere, filling the world, etc.

By the name "the syndrome of Cotard" has been designated a group of symptoms which is encountered

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[1] Pick. *Zur Lehre von der Hypochondrie.* Allg. Zeitscher. f. Psychiat., 1903, fasc. 1–2.

[2] Séglas. *Leçons cliniques,* p. 276. — Cotard. *Du délire des négations.* Arch. de neurol., 1882. — Arnaud. *Sur le délire des négations.* Ann. méd. psychol., Nov.–Dec. 1892. — Séglas. *Le délire des négations.* Encycl. des Aide-mém. — Trénel. *Notes sur les idées de négation.* Arch. de neurol., March, 1899. — Castin. *Un cas de délire hypochondriaque à forme évolutive.* Ann. méd. psych., June, 1900.

in certain cases of chronic melancholic delusional states the constituent elements of which are:

Ideas of negation;

Ideas of immortality associated with ideas of damnation or of being possessed; ideas of immensity;

Melancholic anxiety;

Tendency to suicide;

Analgesia.

The general features of melancholic delusional states are the expression of psychic inhibition and of the painful emotional tone which constitute the basis of the melancholic state.

The following is a summary of the chief characteristics of these states, according to the admirable study of Séglas:

a) Melancholic delusions are *monotonous;* the same delusions are constantly repeated, the inhibition allowing but little formation and appearance of new ideas.

b) These states are *humble and passive.* The patient accuses no one but himself, and submits without resistance to the ill-treatment which he believes himself to have deserved.

c) As to localization in time, the delusions are referred to the *past* and to the *future:* the patient finds in the past the imaginary sins which he has committed, and foresees in the future the chastisements which are to be inflicted upon him. In this respect melancholic delusional states are in contrast with persecutory delusional states. The persecuted patient localizes his delusions chiefly in the *present.* The persecutions of which he complains are actual.

d) From the standpoint of its development the melancholic delusional state is *centrifugal*. The trouble begins with the subject himself and extends gradually to his friends, to his country, and to the entire universe, who suffer through his faults.

e) The melancholic delusional state is *secondary*, that is to say, it is the consequence of sadness and of psychical pain. It shares this characteristic with most of the other delusional states which are generally but the expression of the emotional tone of the subject.[1]

Melancholic delusions may have two grave consequences which I shall many times have occasion to emphasize: suicidal tendency and refusal of food.

Ideas of persecution. — Like melancholy ideas, ideas of persecution are of a painful character. But while the melancholiac considers himself a culpable victim and submits beforehand to the chastisements which he believes he has merited, the subject of persecution is convinced of his innocence and protests and defends himself.

Ideas of persecution may be divided into two groups, according to whether they are or are not accompanied by hallucinations.

Those of the first group are associated with hallucinations, generally of an unpleasant character, among which auditory verbal hallucinations and hallucinations of general sensibility are most prominent. After a certain time the phenomena of psychic disaggregation supervene: motor hallucinations, autochthonous ideas, reduplication of the personality, etc.

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[1] Séglas. *Leçons cliniques.*

In the second group are ideas of persecution peculiarly associated with false interpretations; any chance occurrence is ascribed by the patient to malevolence; he sees in everything evidences of hostility against him, and attributes to the most ordinary and unimportant facts and actions a significance which is as grave as it is fanciful. This form of ideas of persecution is frequent at the onset of certain psychoses; it also constitutes the basis of an affection known as paranoia or reasoning insanity.

Some patients do not know their persecutors. Others accuse some particular persons or societies (Jesuits, Freemasons). Still others bear their hatred towards some certain individual who is, in their eyes, the instigator of all the injurious procedures of which they are the victims, "the great master of the persecutions," as one such patient once said.

Of all delusions those of persecution are the most irreducible and are held by the patients with the most absolute conviction. Almost always the patients resent to have them disputed. In themselves these delusions do not have an invariable influence upon the prognosis, excepting that, in a very general way, they are of more serious import than melancholy ideas.

Of all delusions these also present the greatest tendency to systematization and to progressive evolution. A perfect persecutory delusional system should comprise:

(*a*) A precise idea of the nature of the persecutions;

(*b*) An exact knowledge of the persecutors, of their aim, and of the means employed by them;

(*c*) A plan of defense in harmony with the nature of the delusions.

In the examination of cases with persecutory ideas one should always attempt to determine these points, on account of their great practical importance.

Ideas of grandeur. — Ideas of grandeur appear chiefly in demented states and are often of a particularly absurd nature, bearing the stamp of intellectual enfeeblement. The patients are immensely rich, all-powerful; they are popes, emperors, creators of the universe. Generally they naïvely claim these pompous titles without being at all concerned by the flagrant contradiction existing between their actual state and their ostensible almightiness. A general paretic was once asked: "If you are God, how, then, does it happen that you are locked up?" "Because the doctor refuses to let me go," he replied simply. It is not rare to see a pseudo-pope obey without a murmur the orders of hospital attendants and assist with the best possible grace in the most menial labor.

Often the patient's attire is in harmony with the title: uniforms of the oddest fancy, multicolored tinsels, numerous decorations, etc.

When the intellectual enfeeblement is less pronounced, as, for instance, in certain cases of dementia præcox, the subject shows more logic in his conduct. He assumes an air of dignity, avoids all association with the other patients, and declines with a contemptuous smile all suggestions of employment.

Ideas of grandeur are also met with in certain acute psychoses, as in mania, for instance, and in certain forms of systematized delusional states without intellectual enfeeblement (*Paranoia originaire* of Sander).

CHAPTER IV.

SYMPTOMATOLOGY (*Continued*).

AFFECTIVITY.—REACTIONS.—CŒNESTHESIA—NOTION OF PERSONALITY.

§ 1. Disorders of Affectivity.

Pathological modifications of affectivity are encountered in the course of all psychoses. They always appear early, and often before any of the other symptoms.

The principal ones are:

(*a*) Diminution of affectivity: morbid indifference;

(*b*) Exaggeration of affectivity;

(*c*) Morbid depression;

(*d*) Morbid anger;

(*e*) Morbid joy.

Diminution of affectivity.—In its most pronounced degree indifference involves all the emotions, as in extreme states of dementia (general paresis and senile dementia in their terminal stages), in which it is associated with general intellectual enfeeblement. In its less severe forms indifference is manifested by disappearance of the most elevated and the most complex sentiments, with conservation and often even exalta-

tion of the sentiments of an inferior order. The altruistic tendencies are the first to become effaced, while the egoistic sentiments persist. Only the satisfaction of their material wants still concerns the patients and governs their activity. Many take no interest during the visits of relatives in anything excepting the eatables brought to them; they eat as much as they can, fill their pockets with the rest, and leave without taking the trouble to express their thanks or even to bid their visitors good-by.

Morbid indifference may be *conscious* or *unconscious*. In the first case it is realized by the subject as a painful phenomenon. The patients often say: "I have lost all feeling, nothing excites me, nothing pleases me, nothing makes me sad." Some complain of being unable to suffer. This state, which may be called *painful psychic anæsthesia*, is frequent at the beginning of psychoses and sometimes persists through the entire duration of the affection (affective melancholia, depressed periods of recurrent insanity).

In the second case, which is more frequent, the diminution of affectivity is not noticed by the patient. Such is always the case in states of dementia.

The changes of other mental faculties, such as memory and general intelligence, are not necessarily proportionate to those of affectivity. Notably in dementia præcox it is not rare to find a fairly good memory and a relatively lucid intelligence coexisting with complete indifference.

Exaggeration of affectivity.—Often combined with indifference, as has been shown above, exaggeration of affectivity is encountered in most mental affections,

congenital and acquired. It constitutes the basis of irritable and changeable moods and of the extreme irascibility so often seen among the insane and among degenerates in general.

In the acquired psychoses it is an early symptom, appearing at times long before the other phenomena. An individual previously calm, gentle, kind, becomes disagreeable, ill-natured, violent. "He is completely changed," is a remark often made by the relatives.

Irritability is almost always associated with variability of moods.

Disorders of affectivity serve to characterize a large and important group of patients included under the somewhat vague designation of "constitutional psychopaths." In these individuals the emotions are entirely out of proportion with their causes. The death of an animal plunges them into unlimited despair, the sight of blood brings on syncope, the most simple affairs preoccupy their minds so as to make them lose their sleep. Sensitive in the highest degree, they see in everything malevolent intentions, disguised reproaches. But their sentiments, though very intense, do not last long; sorrows, enthusiasms, resentments, are with them but a short blaze.

Morbid depression. — Depression presents itself in pathological states, as it does in the normal state, in two forms: active and passive. This distinction is founded upon the presence or absence, or rather upon the intensity, of *psychical pain*. While in active depression psychical pain is very prominent, in passive depression it is dull, vague, scarcely appreciable. Indeed, as Dumas says, "the element of pain is not absent

in passive melancholia; but it is not an acute and distinct psychical pain. It is but vaguely perceived." [1]

Passive depression.—The fundamental features of passive depression are lassitude, discouragement, resignation. It is always associated with a marked degree of *psychic inhibition*, *aboulia*, and *moral anæsthesia*, and may be complicated by delusions and hallucinations. It is accompanied by organic changes which have been extensively studied by physiologists (Darwin, Claude Bernard, Lange), and to which Dumas has devoted one of the most interesting chapters in his book, "*La tristesse et la joie.*"

Depression is always associated with a state of peripheral and probably cerebral vaso-constriction, in which Lange believed he had found the immediate cause of this emotion. This vaso-constriction is apparent in the pallor of the skin, coldness of the extremities, and absence of the peripheral pulse, which are constant features of the depression of melancholia. The opinion of Lange is, however, too exclusive. "This vaso-constriction, which in the peripheral organs results in coldness and pallor of the tissues, brings about in the brain a condition of anæmia, undoubtedly contributing to the maintenance of the mental and motor inertia; but it cannot be asserted positively that it is the *only* cause of these phenomena. Morselli and Bordoni-Uffreduzzi have shown long since, in fact, that the phenomena of depressed intellectual activity may appear before the cerebral circulatory changes; this leads to the conclusion that depression begins with being the

[1] *La tristesse et la joie*, p. 29. Paris, F. Alcan.

cause of the circulatory changes before becoming subject to their influence." [1]

In the very rare cases in which, in spite of the peripheral vaso-constriction, the cardiac impulse retains its force, the blood pressure, according to the laws formulated by Marey, rises; this condition constitutes the first type of depression, depression with hypertension.

But almost always the heart participates in the general atony to which the depression gives rise, so that the blood pressure falls in spite of the peripheral vasoconstriction: this constitutes the second type of depression, depression with hypotension (Dumas).

The *respiratory disorders* are no less constant than the circulatory ones. The respirations are shallow, irregular, interrupted by deep sighing. The quantity of carbon dioxide excreted tends to diminish.

The general nutrition is impaired; this results in loss of flesh, which is but slight if the depression lasts no longer than a few days, and which persists as long as the affective phenomenon itself. The weight does not return to the normal until the depression disappears, i.e., until the patient either recovers or becomes demented.

The appetite is diminished, the tongue is coated, the breath is offensive. The process of digestion is accompanied by discomfort and often by pain in the epigastrium. Finally, there is almost always constipation.

The sluggish metabolism shown by the diminished elimination of carbon dioxide is also apparent from the quantitative and qualitative changes in the urinary

[1] Dumas. *Loc. cit.*, p. 239.

excretion. The quantity of urine voided in twenty-four hours is diminished. The quantity of urea, as well as that of phosphoric acid, is also diminished (Observations of Dumas and Serveaux).

The toxicity of the urine in depression is undoubtedly of interest, but the results so far obtained are somewhat conflicting. According to some authors it is increased, according to others, diminished. This subject, still in a state of confusion, should be excluded from the domain of practical psychiatry.

Active depression. — The special feature of active depression is the *psychical pain*, which is distinct and sufficiently intense to render the subject subjectively conscious of it. The appearance of this new phenomenon modifies to a certain extent the fundamental symptoms which have been described in connection with passive depression.

Like physical pain, psychical pain tends to limit the field of consciousness, to exclude other intellectual manifestations, and to become what Schüle has designated by the term *pain-idea*. In certain cases the disturbance of consciousness which it causes results in marked disorientation and confusion. These phenomena, caused by the pain, become less marked as the pain becomes abated in intensity and disappear as the paroxysm passes off.

When psychical pain attains a certain intensity it results in *anxiety*. This phenomenon consists chiefly in a feeling of oppression or constriction, most frequently localized in the precordial region, occasionally in the epigastrium or in the throat, and more rarely in the head. This peculiar feeling is always accompanied by

certain somatic phenomena, the most important of which are pallor of the skin, sometimes actual cyanosis, panting respiration, general tremor, irregular and accelerated pulse, and dilatation of the pupils, which is often very marked.

Anxiety is frequently seen in the melancholias. It also occurs in cases of obsession. It may appear without cause in certain psychopaths (the paroxysmal anxiety of Brissaud).

From the standpoint of the reactions, psychical pain, like physical pain, may manifest itself either by a sort of psychomotor paralysis, — so that the patient remains immovable, with a haggard expression, silenced, so to speak, by the anxiety, — or by various phenomena of agitation.

In the latter case, the more frequent, the pain, an active phenomenon, brings about a reaction which to a certain extent overcomes the fundamental psychic inhibition and manifests itself by two symptoms which are frequently seen together, motor agitation and delusions.

Acting as a stimulus, psychical pain overcomes the motor inertia of melancholia and gives rise to *melancholic agitation*, which is characterized by movements that are, in the normal state, the expression of violent despair. The patient wrings his hands, strikes his head against the wall, etc. The agitation of anxiety is essentially an expression of opposition, of resistance. The reactions are either automatic or governed by delusions: movements of flight, refusal of food, attempts of suicide, etc.

Suicide is one of the most formidable consequences of

psychical pain. Though most melancholiacs have a desire to die, the aboulia which characterizes the state of depression very seldom permits them to carry out their desire. On recovering part of their energy they are apt to make suicidal attempts.

Delusions are a frequent but not a constant manifestation of psychical pain. They are absent in certain cases of melancholia in spite of the existence of even very painful depression.

What is the mechanism of the production of delusions in melancholia? The most widely accepted opinion is that of Griesinger:[1] "The patient feels that he is a prey to sadness; but he is usually not sad except under the influence of depressing causes; moreover, according to the general law of cause and effect, this sadness must have a ground, a cause, — and before he asks himself this question, he already has an answer; all kinds of mournful thoughts occur to him as explanations; dark presentiments, apprehensions, over which he broods and ponders until some of these ideas become so dominating and so persistent as to fix themselves in his mind, at least for some time. For this reason these delusions have the character of attempts on the part of the patient to explain to himself his own state."

Though of great interest, this ingenious theory is perhaps somewhat too exclusive. Kraepelin remarked, in fact, that the delusions occurring in states of depression do not always present the character of explanations sought by the patient. Many melancholiacs instead of accepting the delusions, on the contrary

[1] Griesinger. *Pathologie und Therapie der psychischen Krankheiten.*

reject them, at least in the beginning. Again, the appearance of a delusion does not bring with it the relative calm which would be expected if it really constituted the explanation sought by the patient. It seems, then, that this interpretation, ingenious though it is, is rather superficial. The view of Dumas appears to be nearer the truth. Psychical pain provokes delusions because it acts as a stimulus, struggling against the lassitude, and finally conquering it. Thus there is no logical relationship between psychical pain and delusions, but rather a dynamic one.

Morbid anger.—Pain, associated with a representation of its cause, and sufficiently intense to overcome the psychic paralysis which is an essential accompaniment of depression, results in anger.

The violent and disordered reactions displayed in anger have a purely automatic origin, and are often associated with disturbance of consciousness and of perception which finds various expressions in popular language; a man who is a victim of violent anger is often said to be "beside himself," he "forgets himself."

Like all emotions, anger is accompanied by somatic changes. The principal ones are: increase of cardiac action and elevation of arterial tension; peripheral vasodilatation, chiefly noticeable in the face, which assumes a congested appearance; jerky and convulsive respiratory movements; increase of most of the secretions; abundant salivation (foaming), more or less jaundice, diarrhœa, polyuria; sometimes suspension of the milk secretion; arrest of the menstrual flow; more or less marked cutaneous anæsthesia; general tremor.

Anger may be met with in all psychoses, excepting perhaps affective melancholia. It sometimes reaches the intensity of furor, notably in idiots, epileptics, and other patients with profound disorders of consciousness. It is always associated with morbid irritability and impulsiveness, of which it is but an expression.

Morbid joy or morbid euphoria.—This presents itself in two forms: one, a calm joy, analogous to passive depression; the other, an active, exuberant joy, analogous to active depression.

The first when of average intensity manifests itself by a state of satisfaction, a vague sense of well-being. It is encountered in general paresis and in certain forms of tuberculosis. The optimism and astonishing contentment of some consumptives who have reached the last stage of their illness are well-known phenomena.

When calm euphoria reaches its highest development it becomes *ecstasy*, in which it is not accompanied by any motor reaction. Such is the case in certain forms of mystic deliria.

Much more frequent than this calm and tranquil form of euphoria, the *active* form, noisy, accompanied by motor reactions, is a constant symptom of the so-called expansive forms of psychoses: general paresis with excitement, mania, certain toxic deliria.

Unlike depression, euphoria permits of easy association of ideas and quick motor reactions. These two phenomena do not always indicate real psychic activity. In fact most frequently in pathologic euphoria the associations formed are aimless, independent of all

voluntary intellectual activity, and the motor reactions bear the stamp of impulsive acts originating automatically.

When pushed to a certain degree, the apparent rapidity of association develops into flight of ideas which has already been described.[1]

The aspect of the patient in euphoria is the direct opposite of that in depression. The expression is bright, smiling, with the head raised and the body upright. The speech is very animated and accompanied by numerous gestures.

The concomitant physical phenomena are in general those of joy, that is to say, the reverse of those of depression.

First come the cardio-vascular and respiratory phenomena: peripheral (and probably cerebral) vaso-dilatation, acceleration of the pulse, increased force of the cardiac impulse, and an elevation or a lowering of the blood pressure, depending upon whether the increased heart action does or does not compensate for the peripheral vaso-dilatation.

The respirations are accelerated, deep and regular; the elimination of carbon dioxide is increased. The general nutrition is active, as is seen from the patient's gain in flesh and from the increase of excrementitious products in the urine.

These different phenomena, constant in normal joy and frequent in morbid euphoria, are however absent in some cases, when other factors are present which counterbalance the favorable influence of joy. Such is the case when there is intense motor excitement, which,

[1] See pp. 77 and 78.

in spite of the euphoria, causes a rapid loss of flesh. Such is the case also when the underlying condition is some severe bodily affection. The general paretic or the consumptive with euphoria is none the less cachectic, for in such cases a generally flourishing state of health is not possible.

Certain anomalies are very difficult to explain. Some maniacs show, instead of an acceleration of the pulse characteristic of states of euphoria, a slowing which is at times quite marked. I have observed in a young maniacal girl with marked excitement less than forty-five pulsations per minute for several days. This phenomenon has, I think, not as yet been satisfactorily explained.

§ 2. Disorders of the Reactions.

The different psychic operations which we have so far considered — perception, association of ideas, affective phenomena — find their outward expression in the reactions. Like association of ideas, reactions may be of two kinds: *voluntary* and *automatic*.

Between a voluntary act accomplished in full self-possession and a purely automatic act there are all intermediate gradations; we pass from the one to the other by a gradual insensible transition. The participation of the conscious will diminishes as that of the automatism becomes more prominent, or inversely.

We have seen that in normal ideation voluntary and conscious associations tend to inhibit automatic associations. Similarly the conscious will tends to inhibit automatic reactions.

We shall study: (1) *aboulia*, or paralysis of voluntary reactions; and (2) *automatic reactions*.

Aboulia.—Complete paralysis of the will brings about, depending upon the character of the case, either stupor or absolute automatism. When less pronounced it is manifested clinically by a general sense of fatigue and discouragement, by slowness and unsteadiness of the movements, and by the painful effort that is necessary for the accomplishment of all spontaneous or commanded acts. The voluntary apparatus then resembles a rusty mechanism which works only with difficulty.

Like sluggishness of association, which in most cases accompanies it, aboulia is a manifestation of psychic paralysis.

Automatic reactions. —These may be paralyzed to the same degree as voluntary reactions and give place to the absolute inertia of stupor; or, on the contrary, they may become exalted by reason of the enfeeblement of the conscious will.

We distinguish: (A) positive automatic reactions; and (B) negative automatic reactions.

(A) *Positive automatic reactions* are expressed clinically by two phenomena: *suggestibility* and *impulsiveness*.

By *suggestibility* is understood a state in which the reactions are compelled by external impressions. Its most perfect expression is catalepsy, in which the limbs assume and retain the attitudes in which they are placed by the examiner. This phenomenon has been termed waxy flexibility (*flexibilitas cerea*).

Many patients appear to have lost all individual will and are reduced to pure automatons. Some repeat

exactly the words (*echolalia*) or the gestures (*echopraxia*) of the persons around them. Others exhibit no spontaneous activity, but are able to execute without hesitation any command. Such is the case with hypnotized subjects, certain catatonics, etc. Sometimes it suffices to start them moving, when they will continue and accomplish a series of acts to which they are accustomed.

Suggestibility is the dominant note of the character of certain individuals, mostly credulous and weak-minded, whose thoughts are governed by external impressions, whose will is nil, and who yield to the domination of the most diverse influences, good or bad. Many criminals belong to this class.

Impulsive reactions or *impulses* are to be divided into three groups: (*a*) impulses of passion; (*b*) simple impulses; (*c*) phenomena of stereotypy.

(*a*) *Impulses of passion* always depend upon abnormal irritability. They are determined by provocation that is often insignificant and are accomplished independently of any mental reflection. They are met with in a great many patients: constitutional psychopaths, epileptics, maniacs, etc. A maniac feels his neighbor give him a slight push; he immediately strikes him without reflecting that the latter had no malevolent intention, that he was perhaps even unconscious of having touched him, etc. This is an impulse of passion.

(*b*) *Simple impulses*, purely automatic, appear without any emotional shock and without a shadow of provocation. One patient suddenly threw into the fire the gloves, hat, and handkerchief of her daughter

who came to visit her at the sanitarium. Afterwards during a moment of remission she remembered perfectly the act and the circumstances under which it was accomplished, but was not able to furnish any explanation for it.

The impulse may be *conscious*. A patient is suddenly seized with a strong desire to steal some object from a show-window, the possession of which could be neither useful nor pleasant to him; he does not yield to this impulse, which he recognizes as pathological. This is a conscious impulse. This phenomenon is closely allied to imperative idea, of which it is but an accentuation.

(*c*) *Stereotypy* consists in a morbid tendency to retain the same attitudes, or to repeat the same words or the same movements. Hence the three kinds of stereotypy:

Stereotypy of attitudes;

Stereotypy of language: verbigeration;

Stereotypy of movements.

Certain patients remain for hours at a time in the most uncomfortable attitudes; others will walk a long distance, taking alternately three steps forward and two backward; still others will repeat indefinitely the same phrase or the same verse.

(B) *Negative automatism.*—This forms the basis of negativism and consists in the annulment of a voluntary normal reaction by a pathological antagonistic tendency.

The patient is requested to give his hand; the voluntary reaction which tends to appear and which would result in compliance with the request, is arrested sup-

pressed by automatic antagonism. This disorder of the will has been designated by Kraepelin, who has made an admirable study of it, by the term *Sperrung*, a word which, literally translated into English, means *blocking*. A more significant term perhaps would be *psychic interference*. The two antagonistic tendencies neutralize each other like interfering sound-waves in physics.

On a superficial examination negativism may resemble aboulia. These are, however, two very different phenomena. While the latter, purely passive, is the result of persistent paralysis against which the patient struggles with more or less success, the former, an active phenomenon, depends not upon paralysis but upon a perversion of the will. Negativism is often manifested only in certain kinds of reactions. One patient who walks about without any effort does not open his mouth. Another who makes his toilet, eats unassisted, and even works, remains in complete mutism, making no response in spite of all perseverance on the part of the questioner.

In a more marked degree negative automatism results not only in the arrest of normal reactions, but also in the *production of contrary reactions*.

Thus if one attempts to flex the patient's head he extends it, and *vice versa*. If he is requested to open his half-shut eyes he closes them, and if the examiner attempts to force them open, his orbicularis muscle contracts in a veritable spasm. Wernicke observed that while flexibilitas cerea chiefly shows itself in the limbs, negativism mostly affects the muscle groups of the head and neck.

§ 3. Disorders of Cœnesthesia and of the Personality.

Disorders of cœnesthesia.— By cœnesthesia or vital sense is understood "the general feeling which results from the state of the entire organism, from the normal or abnormal progress of the vital functions, particularly of the vegetative functions" (Höffding.) The stimuli which produce this sense are vague and poorly localized, and are perceived not individually but together as a whole.

The harmony which normally exists between the diverse organic functions produces a vague sense of satisfaction and of well-being. All causes tending to destroy this harmony will produce in consciousness a feeling of malaise and of suffering more or less definite and more or less acute. Thus the disorders of cœnesthesia are intimately connected with disorders of affectivity; most of the depressed states have for their basis an alteration of the vital sense.

Disorders of the personality. — Alterations of the personality constitute the symptom which, following Wernicke, we have termed *autopsychic disorientation.*

These disorders may be arranged in three principal groups:

(*a*) Weakening of the notion of personality;

(*b*) Transformation of the personality;

(*c*) Reduplication of the personality.

(*a*) The *notion of personality* may be incomplete or absent; it may have never been developed at all, or it may have been but incompletely developed, as in idiots

and imbeciles, or it may have disappeared or have become weakened under the influence of a pathogenic cause, as in mental confusion, epileptic delirium, melancholic depression with stupor, etc.

(*b*) *Transformation of the personality* may be complete or incomplete.

In the first case the patients forget or deny everything pertaining to their former personality. Thus one patient claimed that she was Mary Stuart, wanted to be addressed as "Her Majesty the Queen of Scotland," and attired herself in costumes similar to those of that time. She became furious when called by her own name, and obstinately refused to accept the visits of her husband and children, whom she called "impostors." Another patient, afflicted with hysteria, believed herself to have been transformed into a dog; she barked and walked on all fours. Still another patient at the Salpêtrière referred to herself as "the person of myself."

Complete transformation of the personality may be *permanent*, constituting, according to the excellent expression of Ribot, a true alienation of the personality; or it may be *transitory*, so that the new *ego* disappears at a certain time to be replaced again by the former *ego*. In cases in which the normal personality and the pathological one replace each other mutually several times we have variation by alternation.[1]

Incomplete transformation of the personality exists in a great many cases in which the patients are led by their delusions to attribute to themselves imaginary talents, powers, or titles, without at the same time completely

[1] Ribot. *The Diseases of Personality.*

abolishing their real *ego*. One patient suffering from a chronic delusional state of old standing claimed that he was St. Peter, and explained that he had been incarnated in an earthly man for the purpose of bringing happiness to mankind. A general paretic claimed that he was Emperor of Asia, reigning in Pekin, being at the same time aware of the fact that he was living in Paris, and was a newspaper vender.

Garnier and Dupré have described under the name of *paroxysmal mental puerilism*[1] "a retrogression of the intellect to its primitive stages," a state in which the subject once more becomes psychically a child, the transformation being only a temporary one. In the observation which they report a woman of thirty-three years took pleasure in childish amusements, such as playing with dolls, and expressed herself in such childish language that she created the impression "not of an adult woman of thirty-three years, but of a child of five years." This interesting syndrome is encountered in the most diverse affections. It may be met with in hysteria, in cerebral tumors, in abscess of the brain, etc.

(*c*) *Reduplication of the personality* consists in the development of a new personality of a parasitic nature alongside of the real personality of the patient.

This reduplication is the origin of the idea of possession so frequent in chronic delusional melancholia, and results in a psychic disaggregation the most important manifestations of which are autochthonous ideas

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[1] *Transformation de la personnalité. Puérilisme mental paroxystique.* Presse médicale, 1901, No. 101.

(psychic hallucinations) and motor hallucinations. As I have had occasion to indicate above, the patient, feeling that he is losing control of his own thoughts and movements, concludes that a strange personality has taken possession of him.

CHAPTER V.

THE PRACTICE OF PSYCHIATRY.

EXAMINATION OF PATIENTS. — GENERAL THERAPEUTICS OF THE PSYCHOSES.

§ 1. Examination of Patients.

The data for diagnosis, prognosis, and treatment are obtained in psychiatry, as in all the other branches of medicine, from the *anamnesis* and from the *direct examination of the patient.*

The anamnesis. — An anamnesis as complete as possible is indispensable for accurate diagnosis. It should be based upon information obtained from the patient's relatives, and from the patient himself when he is in a condition to give reliable answers concerning the family history and his personal history.

A knowledge of the *family history* enables us to determine the causes of inherited or simply congenital degeneration, to the influence of which the patient has been exposed.

A knowledge of the *personal history,* still more important, informs the physician: (1) as to whether the disease is congenital or acquired; (2) in the case of acquired psychoses, (*a*) as to the nature of the soil (presence or absence of congenital psychic anomalies); (*b*) as to the causes of the disease; (*c*) as to its mode of onset and its duration.

It is customary in many hospitals to obtain from the relatives or from the family physician replies to a definite series of questions on printed blanks. Notwithstanding the very considerable advantages of this method, it ought not to be used exclusively; the alienist should not neglect in addition to interrogate personally all those who are in a position to furnish further information.

Direct examination of the patient. — Three classes of cases may be met with:

(1) The patient himself, realizing his condition, applies to the physician; the examination is then conducted as in any other medical case.

(2) The patient, not realizing his condition, but demented and indifferent, submits passively to the examination. The task of the physician is rendered somewhat more difficult on account of the lack of precision and veracity in the information furnished by the subject.

In both these cases it is justifiable to proceed with a methodical examination conducted according to a plan previously laid out.

(3) The patient does not realize his condition, but is lucid. Being convinced that he enjoys perfect mental soundness, he does not understand why the physician should pry into his personal affairs, and refuses to answer questions which to him seem useless or, worse still, inspired by ill-will; the physician's rôle is here very delicate.

He must endeavor to gain the confidence of the patient, and the best means of doing this is undoubtedly that recommended by Régis: he should introduce himself frankly as a physician called by another member

of the family. In some rare cases he may be obliged to conceal the fact that he is a physician and to introduce himself as a fictitious person in some particular capacity which may suggest itself in the given case.

In such cases the examination is often limited to a simple conversation directed so as to furnish the greatest possible amount of information concerning the patient's mental state. An important rule which should always be remembered is never to dispute the patient's delusions. It may be useful in the diagnosis to find out how the patient takes the disputing of his delusions; but all such attempts require extreme prudence, if one wishes to avoid irritating the patient and thus hindering the examination.

Some commonly employed procedures often enable one to obtain a good deal of information very quickly. Such are questions concerning the patient's surroundings, his age, his occupation, his family.

The three questions, "How old are you?" "In what year were you born?" and "What year is this?" put to the patient successively inform us by the degree of accuracy of the replies obtained: (1) as to the patient's orientation of time; (2) as to the condition of his memory, — that of fixation as well as that of conservation and reproduction; (3) as to the condition of the patient's judgment, by the presence or absence of flagrant contradictions in the replies: the patient may state, for instance, that he is fifty years old, was born in 1882, and that the present year is 1902.

Tests of *reading* and *writing* are also very useful.

The first consists in requesting the patient to read

aloud some paragraph in a book or in a newspaper and several minutes later having him give an account of what he has read; his account is more or less accurate and complete. This test may demonstrate any existing disorders of (1) perception; (2) attention and association of ideas; (3) power of fixation; (4) speech (physical impediments).

A systematic study of the writings of the insane is of the highest interest. The symptoms which such writings reveal are sometimes so clear as to be sufficient in themselves to characterize an affection, and in all cases they constitute valuable elements of diagnosis. Joffroy has very properly classified them into *calligraphic* and *psychographic* disorders. The former pertain to the handwriting as such, which may be more or less irregular, tremulous, hesitating, etc. The latter pertain to the content of the writing and reveal psychic abnormalities: weakening of attention (omission of words, syllables, or letters, errors of spelling due to inattention), weakening of memory (errors of spelling due to effacement of word images or to forgetting the rules of grammar), mental automatism (flight of ideas, incoherence, stereotyped repetition of letters, words, or phrases), various delusions.

The writings constitute trustworthy, permanent documents which may be indefinitely preserved as evidence of the state of psychic (sometimes also of motor) functions of a subject at a given time. One may also, with the aid of the data of graphic pathology and solely by means of examining the writings of a subject, follow in a certain measure the course of a mental disease the development of which is either

progressive, as general paresis, or cyclic, as circular insanity.

From the standpoint of symptomatology four kinds of writings may be distinguished: spontaneous writings, writings from copy, writings from dictation, and painstaking penmanship. Each has its special interest, as each enables us to study particular types of pathological phenomena. Spontaneous writings reveal chiefly the delusions of the subjects and are often of great value in cases of dissimulation. Writing from copy reveals chiefly disorders of attention, and writing from dictation reveals disorders of memory. Finally, painstaking penmanship, which results from the subject's effort to produce the best possible handwriting, brings out motor disorders (tremor and ataxia).

Unfortunately the study of graphic pathology in order to be fruitful must go into certain details which could not be entered upon here for want of space. We must therefore limit ourselves to this brief discussion and refer the reader to works in which this question is specially treated.[1]

Plan of History Taking and Examination.

An examination in a case of mental disturbance should reveal information on general matters of inquiry

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[1] Séglas. *Les troubles du langage chez les aliénés.* Bibliothèque Charcot-Debove. — Köster. *Die Schrift bei Geisteskrankheiten.* Leipzig, 1903. — Joffroy. *Les troubles de la lecture, de la parole, et de l'écriture chez les paralytiques généraux.* Nouv. Iconogr. de la Salpêt., Nov.-Dec., 1904. — J. Rogues de Fursac. *Les écrits et les dessins dans les maladies nerveuses et mentales.* Paris, Masson, 1905.

which may perhaps not without advantage be tabulated in the form of a general plan of observation.

The plan suggested here is without the pretension of being either complete or unalterable. It can and should be modified more or less extensively as may be required.

I. FAMILY HISTORY.

THE FAMILY IN GENERAL (COLLATERALS, ASCENDANTS, DESCENDANTS).	Mental diseases. — Nervous diseases. Anomalies of character and morality. — Irritability or mobility of moods. — Excessive originality; eccentricities in conduct. — Criminality. Congenital malformations. Arthritic manifestations.
THE ASCENDANTS IN GENERAL (GRANDPARENTS AND PARENTS).	Intoxications: Alcoholism, morphinism, etc. Infectious diseases, in particular syphilis and tuberculosis. Overwork. — Grief. Traumatisms, especially those of the cranium.
PARENTS (FATHER AND MOTHER).	Is the patient an illegitimate child? Abnormal conditions in the parents at the moment of conception: overwork, worry, grief; intoxications, especially drunkenness; prodromal or convalescent stage of mental or somatic disease; confirmed psychopathic state. Advanced age of one or both parents; excessive difference between the ages of the two parents.
MOTHER.....	Conditions under which pregnancy has developed and terminated: abnormally severe pains; uncontrollable vomiting; persistence of menstruation; infectious diseases; albuminuria; eclampsia; nervous and mental accidents: change of disposition, obsessions (morbid longings), hysterical or epileptic phenomena, chorea; overwork; traumatisms; violent or prolonged emotions.

Descendants

- Sterility.
- Abortions or miscarriages.
- Still-births. — Death of children at an early age.
- Signs of syphilis in the children.
- Nervous disorders: convulsions, etc.
- Anomalies of development, physical or mental.

II. PERSONAL HISTORY.

Birth

- Premature birth.
- Is the patient one of twins?
- Character of labor: duration, abnormal presentation, forceps operation, etc.
- Vitality at birth.

Physical development.

- Hygienic conditions in infancy and childhood.
- Growth: rapid, retarded.
- Development of the hairy system.
- Dentition: precocious, retarded, accompanied by nervous accidents.
- Age at which the child began to walk.
- Age at which the child became cleanly (with regard to urination and defecation).

Puberty

- Date of onset.
- Accompanying changes of the character.
- Mental or nervous complications: epileptic, hysterical, or neurasthenic manifestations; obsessions, scruples; psychoses.
- Masturbation.

Psychic development.

Language: At what age has the patient begun to speak and especially to understand?

Studies: Has he learned easily to read and write? Was he attentive? Was he considered intelligent?

Degree of success in college or in apprenticeship, as the case may be, and later in the pursuit of his occupation.

Affectivity: Indifference; perversion, — cruelty towards others or towards animals; exaggerated emotional irritability; phobias; morbid affection for animals.

Disposition: Excessive sensitiveness; jealousy; impulsiveness; changeable moods; irrational conduct: numerous bizarre occupations; changes of residence or of occupation.

Conditions of existence.

Occupations followed by patient with special reference to dangers involved. — Intoxications: alcoholism, morphinism, lead-poisoning (house-painters), phosphorus-poisoning, gas-poisoning, etc. — Infections: syphilis (prostitution), tuberculosis (in nurses), etc. — Overwork. —Want of sleep. — Poor ventilation.

Privation.

Bad moral influences.

Celibacy.

Pathological antecedents.

Diseases of childhood: Infections, — measles, etc.; inherited syphilis; infantile marasmus; rickets; nervous and mental accidents in early childhood, — convulsions, meningitis. — Cranial traumatisms.

PATHOLOGICAL ANTECEDENTS (*cont'd*).

- Later childhood, youth, and adult age: Diverse somatic and psychic affections. In the cases of previous attacks of mental disease inquire carefully as to the supposed causes, the symptoms, and especially as to the termination of each attack (mental enfeeblement or complete recovery).
- Anomalies of the sexual instinct.
- In women, menstrual disorders: irregularities, accompanying nervous or psychic disorders, etc.

III. PRESENT ILLNESS.

Assigned causes, physical or psychical.

Mode of onset: sudden or following prodromata.

First symptoms of mental disorder noticed by patient or by his relatives or friends.

Symptoms and course of the disease up to the time of examination.

Treatment which the patient has received and the results obtained.

IV. CLINICAL EXAMINATION.

(*a*) EXTERNAL ASPECT.

Facial expression
- indifferent.
- sad.
- happy.
- irritated.
- silly.

Manner and attitude
- dejected.
- humble.
- haughty.
- aggressive.

Address .....
- friendly.
- mistrustful.
- scornful.

Dress .....
- neglected.
- neat.
- eccentric.

(*b*) MENTAL STATUS.

Consciousness
- paralyzed.
- weakened.

Disorientation
- autopsychic.
- of space.
- of time.

Perception ... { insufficiency. / illusions.

Hallucinations { conscious. / taken for actual perceptions.

Attention .... { paralyzed. / mobile.

Does the patient grasp questions readily?

Association of ideas. { sluggishness. / flight of ideas. / incoherence. / monoideism.

Mental images { effaced. / confused.

Imagination.. { exalted. / diminished.

Memory ..... { exalted (hypermnesia). / diminished (amnesia).

Amnesia { form. / extent. / mode of onset. / origin (for instance, a fixed idea).

Affectivity ... { abolished. / diminished. / exaggerated.

Weakening of the moral sense.

Sexual instinct { weakened. / exaggerated. / perverted.

Judgment .... { absence of, or imperfect insight; imperfect appreciation of his own actions; false interpretations.

Delusions ... { character of: melancholy, persecutory, etc.

Correlations: { incoherent. / systematized.

Degree of accuracy of systematization.

Evolution. { changeable. / fixed. / more or less rapid progress of systematization. / disappearance (convalescence).

Relation to hallucinations.

- *Reactions*
  - Intensity
    - paralyzed (stupor).
    - weakened.
    - exaggerated (impulsiveness).
  - Origin
    - emotional: passionate impulses.
    - exclusively automatic:
      - simple impulses.
      - stereotypy.
      - negativism.
    - hallucinatory.
    - delusional.
  - Consequences
    - reactions of defense
      - means of defense (breastplates, etc.).
      - mystic procedures (incantations, etc.).
    - aggressive tendencies
      - towards others
        - legal procedures.
        - assaults.
      - towards self
        - suicide.
        - self-mutilation.
      - towards inanimate objects
        - destruction of furniture, breaking of window-panes, incendiarism, etc.

- *Language.*
  - spoken.....
    - rapid or slow, hesitation.
    - tone
      - monotonous.
      - declamatory.
      - affected.
      - supplicating.
      - threatening.
    - voice
      - loud.
      - inaudible.
  - written.....
    - rapid or slow.
    - peculiarly shaped letters.
    - orthographical errors.

- *Language (cont'd).*
  - content (spoken and written)
    - restricted vocabulary.
    - profanity.
    - affectation.
    - reiterations.
    - stereotypy.
    - neologisms.
  - mimic
    - absence.
    - exaggeration.
    - affectation.

(*c*) PHYSICAL CONDITION.

- *Principal nervous disturbances.*
  - Sensibility
    - anæsthesia.
    - hyperæsthesia.
    - paræsthesia.
  - Reflexes
    - tendon.
    - cutaneous.
    - mucous.
    - pupillary.

    (exaggerated. / diminished. / abolished.)
  - Motility
    - weakness.
    - incoordination.
    - absence of the sense of fatigue.
  - Trophic disorders.
  - Sleep
    - absent.
    - diminished.
    - permanent somnolence.
    - disturbed by nightmares.

Great organic functions [digestion, circulation, respiration, excretion, etc.].

General nutrition.

Anatomical stigmata of degeneration.

Simulation and dissimulation. — The physician, in considering the question of insanity, should not accept without verification the statements of the subject presented to him for examination, for he may be a *simulator* or a *dissimulator*.

It is often very difficult to discover *simulation*. Undoubtedly most individuals who practice it, being but little informed on insanity, do not exhibit the known types of psychoses: the attitudes, the gestures, the reactions, and the conversation present a constrained, affected aspect of voluntary exaggeration which at the very start may arouse the suspicions of the physician. Still the clinical types are as yet but poorly defined in psychiatry, and it would be extremely imprudent to declare the existence of simulation merely from an unusual combination and character of the symptoms. Affectation in action and in speech, extreme incoherence, apparently voluntary, are seen in catatonia; the agitation of certain hysterical patients, and even of some maniacs, often increases when the patients feel themselves being observed.

The principal elements upon which the diagnosis of simulation is to be based are as follows:

(*a*) The existence of a motive: legal prosecution, some sentence or punishment which the subject may seek to escape or military service which he may wish to evade.

(*b*) The sudden appearance of the symptoms (agitation, delusions, confusion, stupor), without prodromata, which is very rare in the psychoses.

(*c*) The constant observation of the subject whose conduct is often in discord with his delusions or with his simulated disorder of affectivity; a pseudo-melan-

choliac, who declares himself the greatest criminal on earth, loudly demands to be put to death, and refuses food, will hide in a corner to devour with avidity a piece of bread stolen from another patient, and will sleep quietly when alone in his room believing himself to be unobserved. A similar contradiction is encountered in certain established dementias, but never in the beginning of psychoses.

However, the certainty of simulation, even when based upon the confession of the subject, does not necessarily indicate that the subject is a normal and fully responsible individual. The idea itself of simulating a mental affection can arise only in an individual who is psychically abnormal. Joffroy quotes a remark of Lasègue: "One must be morbid to be a simulator of insanity."

Dissimulation [1] is the opposite of simulation. Certain of the insane, almost always of the dangerous class, such as paranoiacs with ideas of vengeance or melancholiacs with ideas of suicide, make efforts to conceal their morbid tendencies by assuming an outward appearance of calmness or even of happiness. They pretend never to have shown, or at least to have recovered from, the mental disorders attributed to them; some admit having been ill, but affirm that it is all over and that they think no more of "their former follies." These patients are sometimes spoken of as being *reticent.* Only the most intelligent and painstaking observation of all the details of the case will enable one to recognize dissimulation; the attitudes and gestures of the patient

[1] Pasquet. *Les aliénés dissimulateurs.* Thèse de Paris, 1898.

must be taken into account, his soliloquies or conversations with the "invisibles," to which he abandons himself when he thinks he is alone, and finally his writings. The latter are of primary importance: many dissimulators who conceal their ideas in conversation do not hesitate to put them on paper in the form of memoranda or of letters to editors of periodicals or to government officials.

§ 2. General Therapeutic Indications: Sanitarium. — Commitment. — Treatment of Excitement, of Suicidal Tendencies, and of Refusal of Food. — [Psychotherapy. — After-care.]

There is no general treatment suitable for all mental diseases any more than there is for all affections of the stomach or of the kidneys. Certain therapeutic indications, however, are of such importance and arise so often that it would be of use to make a general study of them.

Some are relative to the surroundings in which the patients should be placed, others to certain particularly grave manifestations of mental diseases: excitement, suicidal ideas, and refusal of food.

Surroundings; sanitarium; commitment. — It is necessary in most of the psychoses to procure for the patient absolute physical and mental rest and to relieve him so far as possible from his preoccupations, delusional or rational.

These indications are difficult to carry out in the ordinary conditions of life. The obstacles are of a nature both material and moral: material, because only few families can afford the expense involved in the

treatment of an insane patient at home; and moral, because the relatives, inexperienced in the treatment of mental diseases, are not likely to carry out properly all the orders of the physician, and may cause an aggravation of the patient's condition by yielding to all his caprices, being under the impression that he must not be contradicted, and by wearying him in their attempts to reason with him or to distract him.

The removal to a sanitarium is therefore in most cases inevitable.

All insane patients may be grouped in two classes: the inoffensive and the dangerous.

For the first class of cases the sanitarium does not present any particular features and the admission of the patient is effected with no more formality than that into a general hospital.

The patients of the second class must be *committed* or *isolated;* this must be accomplished under the supervision and responsibility of a public authority, and entails certain formalities.

Of all these formalities only one is of interest to us here: the physician's certificate of lunacy.

The certificate, intended to establish the legitimacy of the commitment, need not contain any detailed observations and does not necessarily involve a precise clinical diagnosis. It is of little importance here whether the patient does or does not present inequality of the pupils or abolition of the patellar reflexes. It is also unimportant whether he suffers from mania or from dementia præcox, as long as the symptoms which he presents render him a menace to himself, to others, or to the public peace.

The indications for commitment are chiefly to be based on the dangerous tendencies of the patient: a senile dement who is quiet and tractable can without any inconvenience be cared for at home or in an asylum for old men; another who is on the contrary irritable and violent should be committed without hesitation.

In a general way the following symptoms should be considered as indications for commitment: impulsive tendencies; suicidal ideas; ideas of persecution and hallucinations which bring about violent reactions; states of dementia associated with phenomena of excitement.

The character and intensity of the symptoms should, however, not be the only factors governing the action of the physician. He should also take into account their *probable duration.* If the mental disorder is not likely to persist for more than several days and has no tendency to recur frequently, commitment is not justifiable; such is the case in febrile deliria.

Transfer of the patient to the asylum. — Undoubtedly it is the physician's duty to induce the patient to go to a hospital. Unfortunately this is not always easy or even possible when the question is one of commitment. If the patient is lucid, as in cases of chronic delusional states, one is often compelled, in order to avoid painful scenes, to resort to certain subterfuges, such as proposing to conduct him to some place where he desires to go, or inviting him to go out on an excursion. This question, at times delicate, cannot of course have a universal solution.

Medico-legal testimony. — The purpose of medico-legal testimony is to inform the public official, most

frequently a judiciary authority, as to the mental state of the individual submitted to an examination by an expert, and particularly as to his *responsibility*. The word " responsibility " is used here not in a metaphysical sense, but in a practical one, and is to be defined as " the faculty of adapting (so far as possible) our mental life to the external world, and especially of adapting our mental life to that of other individuals." [1] According to this definition any individual should be declared irresponsible who presents psychic anomalies which prevent his " adapting himself to the external world and to life in society." Thus understood responsibility has an infinite number of degrees. In fact " between those who adapt themselves very well and those who cannot adapt themselves at all there are all those who can adapt themselves but imperfectly, only to certain aspects of social life: persons having but a limited responsibility. Between these two extremes are all the imaginary transitions that exist between perfect health and disease" (Mahaim).

The medico-legal report comprises:

(1) A study of the subject's personality and of the modifications which it has undergone, if any;

(2) In criminal cases, a study of the offenses for which he is indicted, or upon which the parties concerned base their accusations against the subject or their demands to annul agreements or engagements that they may have made with him;

(3) Where possible, a precise diagnosis and prognosis;

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[1] Forel. *Ueber die Zurechnungsfähigkeit des normalen Menschen.* Munich, 1901. — Forel et Mahaim. *Crime et anomalies mentales constitutionelles,* 1902, Paris, F. Alcan.

(4) Finally, conclusions as to the degree of responsibility which may be attributed to the subject.

The information which should guide the expert in preparing his testimony is derived from four principal sources:

(1) The direct examination; (2) prolonged observation of the subject. This, to be of real value, should be conducted in a hospital. Indeed a great many important peculiarities in the conduct and conversation of a subject submitted for an expert's examination remain unnoticed by persons inexperienced in insanity, — prison guards, for instance;

(3) The expert's inquiries from persons who are in a position to furnish information concerning the patient;

(4) A judiciary inquiry the data of which the physician is *a priori* obliged to accept as true in the absence of other evidence. The importance of the judiciary inquiry is extreme and in many cases furnishes the essential element of diagnosis. Driven by jealousy, a man kills his wife. Is his jealousy well-founded or is it but a symptom of insanity? A man creates a disturbance before the house of a banker whom he accuses of having defrauded him of twenty thousand dollars. What truth is there in his accusation? — In many cases only a judiciary inquiry can reveal the necessary information, for a delusion is not always absurd in itself, and insane claims can be presented in a pseudo-logical form which makes them appear well-founded.

TREATMENT OF EXCITEMENT.

Perhaps the greatest progress in the therapeutics of mental diseases within the past few years has been made in our methods for the treatment of excitement.

By degrees means of restraint, always useless, often barbarous, have disappeared from asylums.

The honor of having introduced into France non-restraint, or treatment of excitement without mechanical restraint, belongs to Magnan (1867).

The methods employed to-day in combating excitement may be grouped under four principal heads:

Rest in bed;

Hydrotherapy;

Isolation;

Medication.

Rest in bed.[1] — First used in melancholia (Guislain, Griesinger, Ball), rest in bed has been only recently adopted in the treatment of excitement. Magnan has introduced its use into France, after having shown the excellence of its effects and the relative facility of its employment.

Rest in bed presents the triple advantage of *saving the patient's energy, calming excitement, and facilitating supervision.* It is indicated in most of the acute psychoses and in the periods of exacerbation of chronic psychoses. Rest in bed need not necessarily be constant to be efficacious, except in cases in which the gravity of the general condition requires it. It is well to allow patients to get up for two or three hours daily,

[1] Pochon. Thèse de Paris, 1899. — Wizel. *Ann. méd. psych.*, 1901. — Sérieux et Farnarier. *Ann. méd. psych.*, 1900.

using part of the time for outdoor walks the duration of which is to be determined by the special indications in each case.

Rest in bed produces the best effects when carried out collectively in small dormitories containing not more than ten beds. The example of patients who have already submitted to this mode of treatment exercises a salutary influence upon newcomers and helps to induce them also to accept it. Under favorable conditions two or three days generally suffice for even a very excited maniac to become accustomed to staying in bed, and to become calmed to a certain extent.

Though he may still persist in restless movements, he rarely leaves his bed, and when he does, he will return without difficulty upon the simple injunction of the nurse.

Hydrotherapy. — The *cold douche,* formerly much employed for calming excitement, acts chiefly by its asphyxiating effect. It is therefore not surprising that it has been entirely abolished.

Of the various forms of hydrotherapy two are most frequently used: the wet pack and the prolonged warm bath.

The *wet pack* is applied by means of a sheet soaked in cold water and closely wrapped around the entire body. Its duration varies from twenty minutes to several hours. If too much prolonged it may cause attacks of syncope.

Prolonged warm baths are of great service when rest in bed does not suffice to calm the patient. As generally used their duration does not exceed five or six hours daily. Some physicians, however, have obtained

good results from the *permanent* warm bath: the patient remains in the bath for days or weeks.[1]

Most alienists have abandoned the old-fashioned covered bath-tubs intended to imprison the patient. If necessary he is simply kept in by several nurses until the calming effect of the bath becomes apparent.

Isolation.[2] — Much opposed of late, isolation presents, in fact, certain inconveniences, the gravest of which is leaving the patient by himself without constant supervision; it is absolutely contraindicated in patients with suicidal tendencies, and should not, as a rule, be employed until the other measures, — rest in bed and prolonged baths, — have been tried.

Nocturnal isolation consists in allowing the patient to sleep in a separate room which should, of course, be conveniently accessible to the attendant; it is of great utility for certain chronic disturbed patients. Many a dement who makes a great deal of noise during the night in the dormitory will rest quietly when he is alone.

Medication. — I shall limit myself to the mention of those drugs which are most frequently used in states of excitement, and shall give several formulæ.

Opium in all its forms is used for the insane: extract of opium in pills, aqueous solutions for subcutaneous injections, tincture of opium, etc.

The danger of forming the habit prevents the use of morphine in cases requiring prolonged treatment.

Chloral enjoys a merited reputation. It is adminis-

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[1] Sérieux. *Le traitement des états d'agitation par le bain permanent.* Revue de Psychiatrie, Feb., 1902.

[2] Mercklin. *Ueber die Anwendung der Isolierung bei der Behandlung Geisteskranker.* Allg. Zeitschr. f. Psychiat., 1903, No. 6.

tered in solution by the mouth in doses of from two to three grams for women and from three to four grams for men, or per rectum in doses of from four to five grams for women and from five to six grams for men.

Chloral hydrate	2–4 grams
Syrup of currant-berries	30 "
Water, enough to make	60 c.c.

To be administered in one or two doses by the mouth.

Chloral hydrate	5 grams
Yolk of egg	1
Milk	120 grams

To be administered per rectum, preceded by a simple enema.

Chloral may be combined with bromides:

Chloral hydrate	2 grams
Potassium bromide	4 "
Syrup of currant-berries	30 "
Water, enough to make	80 c.c.

To be administered in one or two doses by the mouth.

Chloral should be absolutely prohibited in cases of heart-disease.

Bromides may also be used alone in doses of from two to eight grams.

Sulphonal, trional, and *tetronal* bring about calm and prolonged sleep in cases of moderate excitement, given in doses of one, two, or three grams. They are usually administered in powders each containing one gram of any one of these hypnotics. One, two, or three such powders, according to the case, is to be administered in the evening towards six o'clock, the action of these drugs being slow.

Chloralose, hypnal and *somnal* may also be of service.

Chloralose..... 20 to 60 centigrams

Given in a powder.

Hypnal..... 2 grams
Chloroform-water..... 100 "
Syrup of peppermint..... 30 "

To be administered in two or three doses by the mouth. (Debove and Gourin.)

Somnal..... 2 grams
Syrup of currant-berries..... 40 "
Water..... 20 "

To be administered like the preceding. (Debove and Gourin.)

Paraldehyde may be given by the mouth, by the rectum, or hypodermically in doses of from 2 to 5 grams. It is an excellent hypnotic. Its only inconvenience is the disagreeable and persistent odor which it imparts to the breath.

Paraldehyde..... 2–5 grams
Rum..... 20 "
Lemon-juice..... 20 drops
Simple syrup..... 30 grams
Distilled water..... 40 "

To be administered in one or two doses by the mouth. (Debove and Gourin.)

Paraldehyde..... 4 grams
Yolk of egg..... 1
Milk..... 120 grams

To be administered in one dose per rectum, preceded by a simple enema.

Paraldehyde..... 5 grams
Cherry laurel-water..... 5 "
Boiled distilled water..... 15 "

For hypodermic injection.

Hyoscine [*hydrobromate or*] *hydrochlorate* is a very active drug and must be used with great caution. It may be administered in solution, in pills, or by subcutaneous injection.

Hydrochlorate of hyoscine	0.005 gram
Syrup of peppermint	30 grams
Water enough to make	120 c.c.

A tablespoonful every ten minutes until four doses have been given.

Hyoscine hydrobromate	0.02 gram
Water	20 grams

For subcutaneous injection.

One ordinary hypodermic syringeful contains one milligram of the drug. Half a syringeful is given at first; it is very rare that the sedative effect is not produced by a whole syringeful.

SUICIDAL TENDENCIES.

Suicide among the insane is perhaps the greatest source of anxiety to the practical alienist.[1]

All the forms of mental alienation, excepting perhaps mania, may give rise to ideas of suicide, but the first place from this standpoint belongs to psychoses of the depressed form (affective melancholia, depressed form of manic depressive insanity, certain forms of alcoholism, etc.).

Whatever the nature of the disease may be, ideas of suicide may result:

(*a*) From an imperative hallucination: a voice calls the patient to heaven, orders him to die in atonement for his sins, etc.;

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[1] Viallon. *Suicide et folie.* Ann. méd. psych., 1901.

(*b*) From a delusion: fear of death from starvation, of being afflicted with an incurable disease; some patients commit suicide to escape the imaginary persecutions of their enemies;

(*c*) From an unconquerable disgust for existence (*tædium vitæ*) or from an intolerable psychical pain;

(*d*) From a sudden impulse (catatonia);

(*e*) From a suggestion: family suicide, epidemics of suicide;

(*f*) From a fixed idea, the origin of which is inexplicable. Such is the case reported by Ferrari: An officer declared on several occasions that it was ridiculous to live beyond sixty years. On the last day of his sixtieth year, after having passed a merry evening with his friends, he announced his intention of committing suicide. He went into his room and shot himself with a revolver.

The smallest objects may become in the hands of patients deadly weapons which they may turn against themselves. Magnan reported a case of a melancholiac who perforated his heart by means of a needle measuring scarcely 3 centimeters in length. Some patients at times resort to procedures so horrible that their use cannot be explained otherwise than by the existence of marked anæsthesia; thus a patient of Baillarger's applied his forehead to a red-hot plate of iron.

In asylums, where the patients are not allowed to have in their possession any dangerous instruments, the means most frequently made use of is *hanging*, which fact is explained by the extreme simplicity of the procedure.

Together with suicide may be classed the *self-mutilations* which patients frequently commit.

Insane patients have been known to cut off their own fingers, lacerate or even cut off their genital organs by means of pieces of glass, open their abdomens, etc.

The *treatment* of suicidal tendencies is reduced to strict and constant watching, which should be instituted as soon as the existence of such tendencies is suspected, and continued for a long time after their apparent disappearance. As we have already stated above, isolation is absolutely contraindicated. Keeping the patient in an observation ward and rest in bed during the acute periods are very useful measures.

REFUSAL OF FOOD (SITIOPHOBIA).

Refusal of food[1] may result from:

(*a*) Delusions with or without coexisting hallucinations: fear of being poisoned or of not being able to digest the food; hypochondriacal ideas;

(*b*) The desire to starve to death;

(*c*) An unconquerable disgust for food;

(*d*) Negativism (catatonia, general paresis).

Refusal of food may be *partial* or *complete*. Some patients will accept only certain kinds of food, often because these appear to them to be the safest or because "the voices" order them so. One patient lived solely on eggs, the shell seeming to him to be the only impenetrable barrier to the mysterious agencies used by his

[1] Pfister. *Die Abstinenz der Geisteskranken und ihre Behandlung.* Freiburg, 1899.

persecutors. One precocious dement would take no nourishment other than stale bread because a voice from heaven commanded him to do penance by fasting.

It may be also *absolute* or *relative*. Often with a little perseverance one may persuade a melancholiac to accept a sufficient quantity of nourishment in a convenient form. Some catatonics refuse what they have been offered and several minutes later devour their neighbor's meal without there being any delusion to explain their conduct. Others refuse to eat, but when food is placed in their mouth they swallow it without trouble. Many even submit with the best grace to being fed with a spoon or with a feeding cup.

When refusal of food threatens to have a bad effect upon the health of the patient, as is shown by loss of weight determined by systematic weighings, one must resort to forced feeding or "tube-feeding."

Tube-feeding may be accomplished in two ways: by the *mouth* and by the *nose*.

Tube-feeding by the mouth is the less painful and less dangerous procedure for the patient as well as the more convenient one for the physician.

The necessary instruments are a *mouth-gag*, a *stomach-tube*, and a *funnel* of glass or rubber.

The operation itself is performed in four stages:

(1) Opening the mouth;

(2) Introducing the tube into the stomach;

(3) Attaching the funnel to the tube and ascertaining the proper penetration of the tube into the stomach;

(4) Introducing the liquid food.

The first stage presents several difficulties due to the resistance of the patient, which is at times very great.

However, by dint of patience and by taking advantage of the little interstices between the jaws it is always possible to accomplish this.

The introduction of the tube is usually easy. The end entering the pharynx sets up reflexly the movements of deglutition, so that the instrument of itself enters the œsophagus. A gentle push suffices to make it enter the stomach.

Although the large size of the tube renders a false passage almost impossible, the purpose of the third stage is to ascertain that the tube is well in place and has not entered the trachea. Two procedures are used to make sure of this: auscultation at the opening of the funnel and introduction into the tube of several drops of pure water. If the noise produced by the gases of the stomach is heard, and if the water runs down freely, the tube is in place and is not obstructed. Otherwise the tube must be withdrawn and cleaned and the operation recommenced.

The liquid nourishment should always be introduced at a low pressure. Its composition may vary according to individual cases. Milk, eggs, beef-juice, peptones, or vegetable soups usually constitute the basis.

Tube-feeding through the *nasal* passages presents several inconveniences:

(1) It is painful;

(2) It often causes irritation and inflammation of the nasal mucosa;

(3) The small size of the tube renders its penetration into the larynx liable to occur, and does not allow the use of any but perfectly liquid food.

This method of feeding should, therefore, not be

resorted to except in special cases, such as those of buccal affections interfering with the introduction of the tube by the mouth. In such cases a properly sterilized nasal tube or large sized catheter is used; its end is lubricated with sterilized vaseline, and the operation is then accomplished in three stages:

1. Introduction of the tube through the nasal fossæ; this is effected without difficulty. [No force should be used; one nasal fossa may be found to be obstructed owing to a deviation of the septum, a growth, or swelling from any cause: the tube may then be introduced through the other nostril.]

2. Passing the end of the tube through the pharynx. This is a most delicate procedure. Owing to reflex contractions or to voluntary efforts on the part of the patient the tube is very apt to become coiled up in the throat, eventually to be expelled by way of the mouth; it must then be withdrawn and the operation re-commenced. This can, in a measure, be prevented: as the end of the tube enters the pharynx a little water may be poured either into the funnel or into the patient's mouth; this starts up movements of deglutition by which the end of the tube is directed into the œsophagus. [As stated above, the tube may enter the larynx and trachea: as soon as that happens all groaning and talking stops and with each respiratory act air rushes in and out of the tube with a sucking and blowing noise; the tube must then be partly withdrawn, until the end is released from the larynx. This is not so apt to occur if the patient's head be raised by two pillows: in that position the direction of the pharynx is more nearly in line with that of the œsophagus, whereas

when the head is hyper-extended the direction of the pharynx is more nearly in line with that of the larynx and trachea; even the voluntary act of swallowing is, in this latter position, as every one knows, difficult.]

3. Descent of the tube down the œsophagus and its penetration into the stomach. The small size of the tube renders it liable to being expelled by an effort of vomiting. This does not happen with a stomach tube such as is used in tube-feeding by the mouth. [By using a tube which is sufficiently stiff this can usually be prevented.]

Not infrequently after tube-feeding the patient rejects the contents of the stomach either spontaneously or by a voluntary effort. This may often be prevented by throwing a few drops of water at his face. In cases of obstinate vomiting the irritability of the stomach mucosa may be diminished by introducing with the liquid food several drops of a solution of cocaine.

It may be useful to precede the feeding by lavage of the stomach.

[PSYCHOTHERAPY.

Psychotherapy is the use of psychic factors in the treatment of disease.

The essential element of psychotherapy is suggestion. Its successful practice is dependent on the nature of the disorder, the attitude of the patient, and the personality of the physician.

The so-called psycho-neuroses (hysterical, neurasthenic, psychasthenic, and allied disorders) are most amenable to psychic treatment. Actual insanity is much less readily influenced.

The patient must have full confidence in the physician and in his methods. "The nervous patient is on the path to recovery as soon as he has the conviction that he is going to be cured; he is cured on the day when he believes himself to be cured." [1]

It follows that the physician must be able to inspire respect and trust. According to Griesinger [2] he must have "a kind disposition, great patience, self-possession, particular freedom from prejudice, an understanding of human nature resulting from an abundant knowledge of the world, adroitness in conversation, and a special love of his calling."

As to the manner of employing suggestion the indications must be sought in the individual case. In some cases, the patient's faith being strong, a mere statement that the symptoms are quickly disappearing may be sufficient. In other cases "rational" suggestion with an explanation of the cause of the symptoms and of the best means of combating them is more effective. "There is a great difference in mentality between the man who is content with a statement, who allows himself to be under the influence of the personality of a healer, and the man who acquires confidence by the clear exposition of the reasons to believe." [3] In still other cases hypnotic suggestion affords the best results.

Special mention should be made of religious influences, which are of extraordinary efficacy in some cases.

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[1] Paul Dubois. *The Psychic Treatment of Nervous Disorders.* English translation by Jelliffe and White. Funk and Wagnalls Company, New York and London, 1905. P. 210.

[2] Quoted by Kraepelin. *Psychiatrie.* Vol. I.

[3] Paul Dubois. *Loc. cit.*, p. 227.

Cures produced by pilgrimages to shrines or by the practice of Christian Science are instances in point. Equally striking are the cures of habits of intemperance produced by religious conversion or, among good Catholics, by taking the pledge of total abstinence. In these, as in other measures of psychotherapy, the active principle is suggestion and therefore the existence of strong faith is a condition necessary for success.

Freud [1] has called attention to certain psychogenic mechanisms the essential feature of which is the repression from consciousness of memories of disagreeable experiences; these repressed memories or "*complexes*" (Jung) give rise to paræsthesias, paralyses, states of anxiety, obsessions, hallucinations, delusions, etc. This occurs in hysteria, but the likelihood of such mechanisms being at work in dementia præcox, some paranoic conditions, certain depressions, and other functional psychoses as well, has been pointed out.[2]

This view of the genesis of certain symptoms has a certain bearing upon psychotherapy. In any case in which the existence of such mechanisms is suspected it becomes necessary for the physician to discover the pathogenic complexes; the mere discovery of the repressed complexes and the demonstration of their

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[1] S. Freud. *Selected Papers on Hysteria and Other Psychoneuroses.* (English translation by A. A. Brill.)

[2] C. G. Jung. *The Psychology of Dementia Præcox.* (English translation by Frederick Peterson and A. A. Brill.) — A. A. Brill. *A Case of Schizophrenia.* Amer. Journ. of Ins., July, 1909. — Ernest Jones. *Psycho-analytic Notes on a Case of Hypomania.* Amer. Journ. of Ins., Oct., 1909.

relation to the symptoms often result, in the language of Freud, in psychic "*catharsis*" and cure.

This is accomplished by means of *psychoanalysis*, — a difficult, time-robbing task requiring skill which comes only with experience. For the purpose of psychoanalysis four methods have been employed: (1) direct but tactful and painstaking interrogation in repeated confidential interviews, (2) the association test,[1] (3) analysis of dreams,[2] (4) interrogation in the hypnotic state.

In cases of mental deterioration the object of psychotherapy is re-education, not with the hope of bringing about recovery but with that of successfully training the subject to do some simple yet productive labor (basket weaving, mat making, chair caning, sewing, farm labor, etc.).

Delusional states are notoriously refractory to suggestion or reason. Yet in selected cases, in which the delusional system is, so to speak, of a parasitic nature, not essentially a function of a vicious mental organization, something may be accomplished when a favorable opportunity presents itself of demonstrating to the patient the incorrectness of his belief.

I shall quote from the recently published autobiography of a man who had suffered from a severe and prolonged attack of manic depressive insanity from which he subsequently recovered.[3]

This man had developed a complex system of delusions of persecution by detectives. Within the space of

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[1] C. G. Jung. *Diagnostische Assoziationsstudien.*

[2] S. Freud. *Die Traumdeutung.*

[3] C. W. Beers. *A Mind that Found Itself.* 1908. New York. Longmans, Green and Co.

a fraction of a minute he succeeded in fully correcting all his false ideas when he found convincing proof that he whom he had regarded as his brother's double and a detective was indeed his true brother.

"I dared not ask for ink, so I wrote with a lead pencil. Another fellow patient in whom I had confidence, at my request, addressed the envelope; but he was not in the secret of its contents. This was an added precaution, for I thought the Secret Service men might have found out that I had a detective of my own and would confiscate any letters addressed by him or me. The next morning, *my* 'detective' (a fellow patient who had the privilege of going and coming unattended) mailed the letter. That letter I still have, and I treasure it as any innocent man condemned to death would treasure a pardon or reprieve. It should convince the reader that sometimes an insane man can think and write clearly. An exact copy of this — the most important letter I ever expect to be called upon to write — is here appended:

August 29, 1902.

DEAR GEORGE:

On last Wednesday morning a person who claimed to be George M. Beers of New Haven, Ct., clerk in the Director's Office of the Sheffield Scientific School and a brother of mine, called to see me.

Perhaps what he said was true, but after the events of the last two years I find myself inclined to doubt the truth of everything that is told me. He said that he would come and see me again sometime next week, and I am sending you this letter in order that you may bring it with you as a passport, provided you *are* the one who was here on Wednesday.

If you did not call as stated please say nothing about this letter to anyone, and when your double arrives, I'll tell him what I think of him. Would send other messages, but while things seem as they do at present it is impossible. Have had some one else address envelope for fear letter might be held up on the way.

Yours,

CLIFFORD W. B.

Though I felt reasonably confident that this message would reach my brother, I was by no means certain. I was sure, however, that, should he receive it, under no circumstances would he turn it over

to any one hostile to myself. When I wrote the words: 'Dear George,' my feeling was much like that of a child who sends a letter to Santa Claus after his faith in the existence of Santa Claus has been shaken. Like the sceptical child, I felt there was nothing to lose, but everything to gain.

The thought that I might soon get in touch with my old world did not excite me. I had not much faith anyway that I was to re-establish former relations, and what little faith I had was almost dissipated on the morning of August 30, 1902, when a short message, written on a slip of paper, reached me by the hand of an attendant. It informed me that my brother would call that afternoon. I thought it a lie. I felt that any brother of mine would have taken the pains to send a letter in reply to the first I had written him in over two years. The thought that there had not been time for him to do so and that this message must have arrived by telephone did not then occur to me. What I believed was that my own letter had been confiscated. I asked one of the doctors to swear on his honor that it really was my own brother who was coming to see me. He did so swear, and this may have diminished my first doubt somewhat, but not much, for abnormal suspicion robbed all men in my sight of whatever honor they may have had.

The thirtieth of the month was what might be called a perfect June day in August. In the afternoon, as usual, the patients were taken out of doors, I among them. I wandered about the lawn, and cast frequent and expectant glances toward the gate, through which I believed my anticipated visitor would soon pass. In less than an hour he appeared. I first caught sight of him about three hundred feet away, and, impelled more by curiosity than hope, I advanced to meet him. 'I wonder what the lie will be this time,' was the gist of my thoughts.

The person approaching me was indeed the counterpart of my brother as I remembered him. Yet he was no more my brother than he had been at any time during the preceding two years. He was still a detective. Such he was when I shook his hand. As soon as that ceremony was over he drew forth a leather pocket-book. I instantly recognized it as one I myself had carried for several years prior to the time I was taken ill in 1900. It was from this that he took my recent letter.

'Here's my passport,' said he.

'It's a good thing you brought it,' said I coolly, as I glanced at it and again shook his hand — this time the hand of my own brother.

'Don't you want to read it?' he asked.
'There is no need of that,' was my reply. 'I am convinced. . . .'
This was the culminating moment of my gradual readjustment. . . .
In a word, my mind had found itself."

Of the methods or technique of psychotherapy no full discussion can be given here. The general lines of procedure have already been indicated. For an excellent guide in practical psychotherapy the reader is referred to the exhaustive work of Dubois.]

[AFTER-CARE

When a patient has recovered from his mental trouble and has been discharged from the hospital the treatment of his case must not be regarded as finished, for there is still to be dealt with *an extreme liability to recurrency.*

Of a total of 6689 cases admitted to the hospitals for the insane in the State of New York during the year ending September 30, 1908, 1388 were cases of re-admission.[1] That is to say, that minute fraction of the population which consists of patients discharged from asylums has contributed over 20 per cent of all the admissions.

To what extent is recurrency preventable?

(1) In some cases recurrency must be regarded as probably inevitable, though perhaps it can be staved off by general hygienic measures; such are cases of general paresis in remission and well established cases of manic depressive insanity.

(2) In other cases, in which, in addition to a strong predisposition to mental disturbance, there is a history

[1] Twentieth Annual Report of the N. Y. State Commission in Lunacy.

of some *removable exciting cause* in the etiology of the first attack, recurrency may often be prevented by avoidance of re-exposure to the original exciting cause. It is true that in many of these cases some cause, other than the original exciting cause, may give rise to recurrency owing to special vulnerability of the patient's mental organization. Yet it cannot be doubted that in a good proportion of these cases prophylactic measures could prove very successful. Among the common avoidable causes may be mentioned: loss of employment, overwork, inanition and exposure due to poverty, childbirth, and neglected somatic diseases (diabetes in which the proper diet has not been enforced, nephritis complicated through neglect of treatment by uræmic delirium, etc.).

(3) In still other cases, in which there is no strong predisposition and in which the trouble is due entirely to some avoidable cause, *recurrency can be absolutely prevented.* This is a very large group of cases consisting of the alcoholic psychoses, morphinism, cocainism, etc.

For the practical and efficient after-care of the insane with a view to the prevention of recurrencies elaborate facilities are required which could be established only either as a very liberally endowed private charitable organization or, and perhaps better, by the state, as an After-Care Bureau.

Such an organization or Bureau should, for reasons that are sufficiently obvious, be preferably under the directorship of a physician of experience in the care of the insane. For his guidance he should have on file a transcript of the hospital records of every patient that

is discharged. Connected with the Bureau should be an employment agency, a visiting agency — for the purpose of visiting discharged patients at their homes, — and facilities for the temporary housing and boarding of recovered patients who are homeless and whom it may be particularly important to keep from returning to their old environment; for reasons of economy, if for no others, it is not prudent for the state to discharge from its care "into his own custody" a homeless bartender, after several months of treatment for alcoholic hallucinosis: his only friends are in the saloon where he was employed, or in some other saloon, and there is hardly anything else left for him to do than to go back to them, — and straight to perdition, — to have recurrencies and ultimately to become a permanent charge upon the state.]

PART II.

SPECIAL PSYCHIATRY.

CLASSIFICATION.

PATHOLOGICAL anatomy is the only criterion that enables us to establish in the diseases of an organ categories corresponding to reality. The lesions of most of the psychoses being unknown, each school assumes the right to create a classification corresponding with its tendencies, which may be more or less ingenious, but is necessarily artificial.

Of all those offered to us by psychiatry it would be best to select the most practical, the most convenient, and the one which in a given case would enable us most easily to establish a prognosis and to institute treatment. The classification of Kraepelin appears to me to present great advantages from this standpoint.

I shall therefore adopt it here with some modifications, which shall be indicated in the course of this work.

The following are the morbid entities described in this manual, enumerated in the order which I propose to follow.

I. Infectious psychoses:

Febrile delirium;
Infectious delirium;
Hydrophobia.

II. Psychoses of exhaustion:

Mental confusion; acute delirium.

III. Toxic psychoses:

(*a*) *Acute:*

Pathological drunkenness.

(*b*) *Chronic:*

Alcoholism;
Morphinomania;
Cocainomania.

IV. Psychoses of auto-intoxication:

(*a*) *Acute:* Uræmia;
(*b*) *Subacute:* The polyneuritic psychosis;
(*c*) *Chronic:* Myxœdema;
Dementia præcox; chronic delusional insanity;
General paresis.

V. Psychoses dependent upon so-called organic cerebral affections:

[Tumors; multiple sclerosis; brain abscess; central neuritis; cerebral syphilis; traumatic lesions; cerebral arteriosclerosis.]

VI. Psychoses of involution:

Affective melancholia;
Senile dementia.

VII. Psychoses which are apparently based chiefly upon a morbid predisposition:

Manic depressive insanity;
Paranoia.

Constitutional psychopathic conditions:
Mental instability;
Sexual perversions and inversions;
Obsessions.

VIII. Psychoses based upon neuroses:
Epilepsy;
Hysteria.

IX. Arrests of mental development:
Idiocy and imbecility;
Moral insanity.

CHAPTER I.

DELIRIA OF INFECTIOUS ORIGIN.[1]

The mental disorders which appear in the course of infectious diseases are brought about by the combined action of several factors: elevation of temperature, congestion of the nervous centers, and poisoning of these centers by microbic toxines. The most important factor appears to be the poisoning of the nervous centers.

One cannot fail to notice the striking clinical resemblance existing between the toxic deliria, properly so called, and the infectious deliria; indeed the resemblance is so close that without the somatic symptoms peculiar to each condition it would be difficult or even impossible to make the differentiation. Notes on such cases almost always describe the same symptoms: clouding of consciousness, confusion, numerous illusions and hallucinations, motor agitation.

Moreover, the infection itself, independently of hyperpyrexia and probably of any meningeal lesion, may cause grave mental disorders (infectious delirium proper) which can only be explained by a toxic action.

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[1] Klippel et Lopez. *Du rêve et du délire qui lui fait suite dans les infections aiguës.* Rev. de Psychiatrie, April 1900.—Desvaux *Délire dans les maladies aiguës.* Thèse de Paris, 1899.

After the description of febrile delirium I shall say a few words with regard to infectious delirium proper. I shall also give a brief description of the mental disorders of hydrophobia, which, though belonging, like the preceding, to the group of infectious psychoses, merit a special description on account of their constancy and their peculiar aspect.

Febrile delirium. — In the mental disorders of febrile origin three degrees of intensity can be schematically distinguished.

In the slightest degree of intensity the disorder is limited to slight *mental torpor* and *irritability*.

In the second degree there is *disturbance of ideation*. The remarks of the patient become disconnected, and are characterized by a peculiar monotony suggestive of a fixed idea. Ten times in succession he will ask whether the cupboard is properly locked, or whether such and such a matter has been attended to, or whether some particular note has been duly paid. At the same time some illusions, chiefly affecting vision, make their appearance. It seems to the patient that someone is in hiding behind the curtains, that the furniture in the room has assumed peculiar shapes. He does not recognize the voices of those about him and confounds them with each other. All these phenomena the patient is more or less conscious of. He realizes, either spontaneously or from the remarks made by those about him, that he is mistaken, "that he is raving, that he no longer knows what he is talking about." He is in a state of indefinable uneasiness and is apt to become somewhat restless, especially at night. He feels ill at ease in his bed, tosses from side to side, asks to get up.

Finally, in the third degree of intensity we have true delirium. This consists essentially in *more or less profound clouding of consciousness combined with vague delusions, multiple psycho-sensory disorders, and motor excitement which is at times very marked.*

The delirium is essentially variable and mobile, at times pleasant, at others painful; the psycho-sensory disturbances are of the combined form with a predominance of illusions and hallucinations of sight. The images and scenes follow each other as in a dream, of which they seem to be a continuation (dream delirium). The patient imagines he is in the country, in a theater, in a church; pompous processions march past him amidst the sounds of music and the perfume of flowers and censers; he converses with imaginary persons, defends himself against assassins, rejects a glass of milk offered him, thinking that it is poison. Often under the influence of his hallucinations he strikes at the air and attempts to get out into the street or to pass through the window, which he takes for the door.

However, as during a dream, the subject may by a sudden and energetic call be transported from his imaginary world into the real one. Such periods of lucidity are in general but transitory.

Often, chiefly in the beginning of all forms and through the entire course of the mild forms, the delirium disappears in the morning to reappear in the evening and to last during a portion of the night.

The *prognosis* depends less upon the intensity of the delirium than upon the physical symptoms which accompany it. As a rule all febrile affections com-

plicated by intense delirium should be considered as grave.

In fatal cases the delirium gradually subsides and coma replaces the excitement.

Febrile delirium, like acute alcoholic intoxication, is an excellent criterion for judging the resistance of the brain: the greater the predisposition to mental disorders and the more marked the *degeneration* of the subject the more likely it is for delirium to occur under such circumstances. Like alcohol, the microbic poisons and the toxic products of the organism act most readily upon brains the equilibrium of which is least stable and therefore most easily disturbed.

The *treatment* is that of the infectious disease. Strict watching is indicated. Cold baths are often very efficacious in relieving the mental disorders.

Infectious delirium proper. — Kraepelin and Aschaffenburg have described under the name of *infectious delirium* mental disorders which supervene in the course of an infection without the fever being particularly intense or even before any fever has appeared (*Initialdelirium*).

Infectious delirium is met with chiefly in typhoid fever, in variola, and in typhus fever. The symptoms sometimes take the form of maniacal excitement, more often that of acute confusional insanity or of hallucinatory delirium.

The mental disorders of hydrophobia. — Almost always these appear as the first symptoms of the disease. Long before the onset of the hydrophobic symptoms proper, even while the patient is still unaware of the threatening danger, he becomes depressed, gloomy,

seclusive, and has occasional attacks of anxiety. Sometimes, pressed by irresistible impulse, he becomes extremely restless, walks or runs about for hours at a time, and finally returns home more tranquil, relieved for a time: it seems that the morbid irritation of the motor zones is calmed. Very prominent also are the inexplicable changes of the emotional state: the sudden outbreaks of affection or of joy, contrasting strikingly with the background of depression and indifference.

The sleep is interrupted by sudden starts and disturbed by nightmares.

The emotional disorders persist through the entire duration of the disease. But, except during the spasmodic seizures, consciousness remains intact up to the very last. In a few rare cases a continuous delirium is established, assuming various forms: mystic, persecutory, melancholy, etc.

During the *paroxysms* there is very severe anxiety, agitation reaching almost the intensity of furor, and psycho-sensory hyperæsthesia which in extreme cases gives rise to hallucinations: the patient sees flowers, fantastic forms, hears the noise of firearms, the sounds of trumpets, etc.

The phenomena of excitement gradually become less marked and finally disappear with the onset of the paralytic stage.

The *diagnosis* rests upon the existence of psychosensory hyperæsthesia, and especially upon the characteristic spasms of hydrophobia (pharyngeal spasms).

The *treatment*, which is but palliative, consists in the administration of antispasmodics in large doses.

CHAPTER II.

PSYCHOSES OF EXHAUSTION.

PRIMARY MENTAL CONFUSION, ACUTE DELIRIUM.

Well described by Georget and by Delasiauve under the name of "Stupidity," primary mental confusion has only recently been brought again into prominence in French medical literature through the labors of Chaslin and of Séglas.[1]

The fundamental element of this morbid entity is mental confusion which is *primary, profound, and constant.*

Essential symptoms. — After several days of ill-defined prodromata such as headache, anorexia, and change of disposition, the disease sets in, manifesting itself by psychical and physical symptoms.

A. Psychical symptoms. — These are the symptoms of intellectual confusion, more or less marked and more or less pure according to the gravity of the disease:

Clouding of consciousness;

Impairment of attention;

Sluggish and disordered association of ideas;

Insufficiency of perception;

Aboulia, characterized by constant indecision and by slowness and uncertainty of the movements.

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[1] Chaslin. *La confusion mentale primitive.* — Séglas. *Leçons cliniques.*

The state of the automatic psychic functions varies according to the form of the disease: the mental automatism may be relatively unaffected (simple mental confusion), exaggerated (delirious mental confusion), or paralyzed, like the higher mental functions (mental confusion of the stuporous form).

B. Physical symptoms. — The physical symptoms are constant and " are the expression of the *general prostration, exhaustion,* and *malnutrition*" (Séglas).

Loss of flesh is an early and a very marked symptom. It is caused by insufficient alimentation, digestive disorders, and especially by defective assimilation of nutritive matter.

Fever sometimes exists, chiefly at the onset; in some cases, especially in the stuporous form, there may be *subnormal* temperature.

A small low tension *pulse,* feeble and at times irregular heart sounds, sluggishness of the *peripheral circulation,* cyanosis of the extremities, and œdema are among the manifestations of the general atony of the cardio-vascular apparatus.

The appetite is abolished, the tongue coated; the process of digestion is accompanied by painful sensations; constipation is often present and is very obstinate.

Frequently there is slight albuminuria. The *toxicity of the urine* is often increased, this being dependent on the presence of certain ptomaines in the urine (Ballet and Séglas).[1]

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[1] For a bibliography bearing on the changes in the urine in mental confusion and in the psychoses in general, see Ballet. *Les psychoses.* (Article in *Traité de Médecine,* edited by Charcot-Bonchard and Brissaud.) Chapters on Melancholia and Mental Confusion.

The sleep is diminished, often replaced by a dreamy state analogous to that of the infectious diseases.

Primary mental confusion may be met with in four principal forms, differing in their gravity and in the predominance of one or another class of symptoms:

Simple mental confusion;

Delirious mental confusion;

Stuporous mental confusion;

Hyperacute mental confusion (acute delirium).

Simple mental confusion. — The essential symptoms which have been enumerated above are encountered here in their purest form. The phenomena of psychic paralysis are of a moderate degree of intensity and the automatic mental functions are unaffected.

The patient is often more or less conscious of his condition; he observes that a change has taken place in him. "I am losing my head. . . . My mind is a blank. . . ." He perceives his mental disability and complains of being unable to gather or direct his thoughts or to evoke reminiscences — even of events that have left a very strong impression.

The indecision and insufficiency of perception bring about a state of *constant bewilderment.* The patient keeps repeating the same questions and the same exclamations: "Who is there?. . . Who has come?. . . Who are you?. . . Everything around me has changed." He does not recognize his surroundings, or if he does, it is with uncertainty. He is not certain about the identity of those about him; his bed appears queer to him, his own body seems to him to be changed, scarcely recognizable. It seems to him that his personality is going to pieces so that he no longer recognizes himself. The

notion of time is impaired. The patient cannot tell whether he has been at the hospital a day or a week. In other words the patient's orientation suffers in all its elements: allopsychic, autopsychic, and temporal. The disorientation is generally more marked when the patient is away from his habitual surroundings. While, surrounded by familiar persons and objects, the patient orients himself more or less automatically, in a new place he could find his bearings only by a series of mental operations of which he is no longer capable.

The reactions are slow, undecided; the movements awkward and clumsy.

The mental automatism remaining intact, those mental operations which require no effort and no intervention of the will can still be properly performed. Thus one may obtain from the patient a certain number of relevant and accurate replies to questions concerning his age, occupation, residence, etc. But these replies are always given mechanically; they are brief and abrupt, and can be elicited only by putting the questions energetically and concisely.

This simple, and, so to speak, schematic form of primary mental confusion is uncommon.

Delirious form. — This form, much more frequent than the preceding one, owes its peculiar aspect to a more or less marked exaggeration of the activity of the mental automatism, which gives rise to: (*a*) flight of ideas and incoherence; (*b*) delusions and psycho-sensory disorders; (*c*) more or less motor excitement.

The *delusions* present no systematization, as for this at least a relative lucidity is necessary. They assume different forms, which often interchange in the same

subject; ideas of grandeur, transformation of the personality, melancholy ideas, ideas of persecution. Painful delusions are the most common. Sometimes the ideas are absurd, like those of senile dements or of general paretics.

The *psycho-sensory disorders* consist sometimes in agreeable, but more often in painful, illusions and hallucinations of all the senses, though most often of vision and of hearing. They may combine so as to create an imaginary world which is essentially mobile and changeable, or, on the contrary, they may exist together without any apparent correlation.

Occasionally the incessant illusions and hallucinations impart to the patient a peculiar expression. Most cases described under the name of hallucinatory delirium should properly be included in this form of mental confusion.

The *emotional tone* is variable, governed to some extent by the delusions. However, one often finds, in spite of very active delirium, a striking indifference, so that a certain discord exists between the delusions and the emotions.

The *motor excitement* is not always due to delusions or psycho-sensory disturbances. As in dementia præcox, so also in this condition the patient may give vent to cries and motor discharges that are purely automatic and without any apparent purpose.

Mental confusion of the stuporous form. — Here the psychic paralysis involves not only the higher mental faculties, but also the automatic psychic functions.

The limbs are motionless, the eyes dull, and the face expressionless; the mouth may be half open and the

saliva dribbling away uncontrolled. The patient fails to react even to the strongest stimulation, or he may react but very feebly.

Cataleptic attitudes with dilated pupils are frequently seen.

Hyperacute form (acute delirium). — This form is characterized by special intensity of the delirium and of the motor excitement on the one hand, and by great gravity of the general symptoms on the other hand.

The patient, attacked by numerous hallucinations, either painful, or agreeable and accompanied by erotic tendencies, becomes completely disoriented and wildly excited: he shouts, sings, jumps out of bed, strikes the walls, and attacks those about him. The eyes are injected, the respiration is panting, the skin covered with perspiration, the temperature high, and the pulse small and often rapid and irregular. These signs point to the general gravity of the condition. In fatal cases the patient rapidly passes into coma and dies in a few days. In favorable cases the agitation gradually disappears, the patient regains his sleep, and recovery finally takes place; this favorable termination is rare.

Duration, course, and prognosis of primary mental confusion. — The duration of the attack varies from several days to a few months. The curve representing its intensity is rapidly ascendant, then it remains stationary for some time with some oscillations, and finally descends gradually. The period of descent often presents irregularities on account of recrudescences of the disease, which are usually mild.

Such is the course of favorable cases, which fortunately are the most frequent (excluding acute delirium).

Recovery is complete. But the patient's recollection of the events which have taken place during his illness is vague or even absent. The period of *convalescence* is protracted.

Suicide is rare even in the depressed forms; the aboulia is the patient's safeguard.

In unfavorable cases death occurs from collapse in the hyperacute form, and from cachexia or from some complication (pneumonia, subacute tuberculosis, influenza, infections following traumatisms) in the less rapid cases.

Diagnosis. — The principal elements of diagnosis are: the appearance of mental confusion at the onset of the disease; the possibility of obtaining correct replies to simple and energetically put questions; the state of physical exhaustion, and the existence of the special etiological factors, which we shall mention further on.

Many psychoses may resemble primary mental confusion because they may be complicated by secondary mental confusion. The points of differential diagnosis will be indicated in the respective chapters devoted to the consideration of these psychoses.

Pathological anatomy. — The lesions of primary mental confusion are of two kinds: inflammatory and degenerative. The former, which are most prominent in the severe cases, consist in congestion and diapedesis in the nervous centers. The latter are more constant, and consist in degeneration of the nerve-cells, which is demonstrable by Nissl's method.[1]

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[1] Ballet et Faure. *Contribution à l'anatomie pathologique de la psychose polynévritique et certaines formes de confusion mentale primitive.* Presse méd., Nov. 30, 1898. — Maurice Faure. *Sur*

Etiology. — All factors capable of bringing about rapid and profound exhaustion of the organism occur in the etiology of primary mental confusion: physical and mental stress, painful and prolonged emotions, but especially *grave somatic affections.* The puerperal state, through the exhaustion which it entails as well as through the nutritive disorders and infections by which it is sometimes complicated; the infectious diseases (typhoid fever, the eruptive fevers, influenza, cholera); profuse hemorrhages; inanition, etc., are among the causes frequently found in the history of the disease.

How is the action of these factors to be explained? Two hypotheses are possible.

According to one, that of Binswanger, the general exhaustion of the organism brings about *deficient cerebral nutrition* the clinical expression of which is primary mental confusion.

According to the other, advanced by Kraepelin, the causes enumerated above bring about disturbances in the nutritive changes and determine the production of toxic substances which, acting upon the cerebral cells, give rise to an *intoxication psychosis:* primary mental confusion.

Perhaps both causes are at work simultaneously. In either case exhaustion constitutes the essential cause of the affection and the term "*Exhaustion Psychosis*" is therefore perfectly applicable to it.

Treatment. — During the entire acute period of the disease *rest in bed* should be rigorously enforced.

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les lésions cellulaires corticales observées dans six cas de troubles mentaux toxi-infectieux. Rev. neurol., Dec. 1899.

Proper *alimentation* is of great importance. A reconstructive diet better than all medication sustains the patient's strength and even calms the agitation. Milk, eggs, chopped meat, and meat-juice should form the basis of the diet.

In cases of sitiophobia one must resort without hesitation to artificial feeding; these patients cannot with impunity be allowed to fast. Gastric lavage sometimes gives good results, even in cases of acute delirium.

Injections of artificial serum are of great service and easy of application. The necessary apparatus consists chiefly of a glass funnel, a soft-rubber tube, and a slender trochar.

Ordinarily 300–500 grams of Hayem's serum [or of normal saline solution] may be injected every day or every second day.

The most important results of this treatment are elevation of the blood pressure and diuresis.[1]

Moderate physical exercise, life in the open air, reading, and light mental work for brief periods at a time accelerate the course of convalescence.[2]

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[1] Cullerre. *De la transfusion séreuse sous-cutanée dans les psychoses aiguës avec auto-intoxication.* Prog. méd., Sept. 30, 1899. — Jacquin. *Du sérum artificiel en Psychiatrie.* Ann. méd. psych., May–June, 1900.

[2] I have intentionally omitted the mental disorders of chronic exhaustion. They form a part of the symptomatology of neurasthenia, for a description of which the reader is referred to works on neurology.

CHAPTER III.

PATHOLOGICAL DRUNKENNESS.

(ACUTE ALCOHOLIC INTOXICATION.)

THE term *drunkenness* is here used to designate the nervous and mental symptoms by which acute alcoholic intoxication manifests itself.

The *predisposition* to the state of drunkenness, quite variable in different subjects, is a part of the general tendency of the individual toward nervous and mental disorders. "It may be truly said that alcohol is the touchstone of the equilibrium of the cerebral functions."[1]

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[1] Féré. *La Famille névropathique.* Paris. F. Alcan.— [This statement is correct, *everything else being equal.* But it must be borne in mind that there are other factors, besides mental instability, that have to do with an individual's susceptibility to alcohol. *Age* is one such factor, young persons being more susceptible than middle aged or old ones. But by far the most important factor is *habit.* We know well that it is not uncommon for morphine habitués, who have gradually acquired a tolerance for that drug, to take as much as twenty grains at a dose with no other than a mild euphoric effect, whereas one-fortieth of this dose produces profound sleep in an ordinary person, and one-tenth may readily prove fatal. We know also that the same kind of tolerance can be acquired for arsenic and for many other poisons, and, in fact, we often utilize this very principle in the artificial production of immunity against certain microbic toxines, such as those of diphtheria and tetanus. It is undoubtedly so also in the case of alcohol, for it is on the basis of such an acquired tolerance that chronic alcoholics universally boast of being able to "stand any amount" or at least of being "always able to navigate."]

I have now under observation an imbecile whom a single glass of wine suffices to make drunk.

Drunkenness is somewhat schematically divided into two stages: (1) excitement, and (2) paralysis. In reality paralysis is present from the beginning, but in the first stage it is limited to the highest psychic functions and is masked by the intensity of the automatic phenomena, so that it does not become evident until the second stage, when *all* the nervous and mental functions become involved in the paralysis.

First Stage: Excitement. — *Psychic inhibition*, the first manifestation of the paralysis, is seen in the slow association of ideas, the distractibility, and the insufficiency of perception.[1] The automatism is apparent from the disconnected conversation, which may show a true flight of ideas, the abnormal pressure of activity, the more or less marked morbid euphoria and irritability, the impulsive character of the reactions, and the extremely voluble speech. The moral sense and the regard for common conventionalities gradually disappear, and the patient may commit ridiculous, repugnant, offensive, or even criminal acts.

Second Stage: Paralysis. — Paralysis, confined in the preceding stage to the sphere of the higher psychic functions, now attacks the automatic functions. The movements are awkward and clumsy, the speech indistinct, the gait unsteady. Gradually the patient falls into a profound, sometimes comatose, sleep, — the final stage of the attack, — from which he awakes lucid but

[1] Rüdin. *Auffassung und Merkfähigkeit unter Alkoholwirkung.* Kræpelins Psycholog. Arbeiten, Vol. IV, No. 3.

with a confused recollection of what has passed and with a pronounced sensation of mental and physical fatigue.

Such is, rapidly sketched, the aspect of common drunkenness. From the accentuation or obliteration of certain features result the diverse abnormal or pathological forms.

Comatose drunkenness. — The phenomena of excitement are either absent or very transient. From the beginning the paralysis affects the entire brain. The patient sinks and remains inert and insensible for several hours. His face is congested. Gradually the comatose state is replaced by sleep, from which the patient awakes without any recollection whatever of the occurrences immediately preceding his intoxication. Sometimes the pulse becomes small, the heart weak, the breathing labored, and in some cases, which are fortunately rare, the patient dies in collapse.

Maniacal drunkenness. — Here paralysis occupies a secondary position and excitement dominates the scene. The phenomena of agitation generally develop very rapidly. All of a sudden the drunkard, while still at the saloon-keeper's bar, is seized with an outbreak of furious madness without any apparent cause or provocation; he breaks objects and furniture, becomes noisy, and threatens and attacks those about him. The extreme clouding of the intellect shows that, in spite of appearances, "psychic activity takes but a very small part in the production of the outbreak," and that "subjugated by this automatic development of psycho-motor activity it disappears entirely." [1] Almost

[1] Garnier. *La folie à Paris.*

always numerous psycho-sensory disorders (hallucinations and illusions) are associated with the clouding of the intellect and the excitement.

The attack terminates in profound sleep. This, as in the preceding form, is followed by almost complete amnesia.

Convulsive drunkenness. — The maniacal form of drunkenness resembles closely the delirious attacks of epilepsy. The relation between epilepsy and acute alcoholic intoxication appears still closer when we consider that drunkenness may clinically assume the aspect of an epileptic seizure. This is explained by the convulsive properties of alcohol, which have been demonstrated experimentally. Attacks precisely like those of essential epilepsy may supervene in the course of common drunkenness. In all cases they immediately follow the alcoholic excesses, differing in this respect from those epileptiform seizures which supervene in the course of chronic alcoholism.

Delusional drunkenness. — This curious but rare form has been well studied by Garnier. The delusions are extremely variable: ideas of persecution, ambitious ideas, depressive ideas with suicidal tendencies, etc. Delusional drunkenness is encountered only in profoundly degenerated individuals.

Pathological anatomy.— The lesions of acute alcoholic intoxication have been studied chiefly in animals poisoned experimentally. *Macroscopically* there are conjestion and sub-pial hemorrhages. *Microscopically* are found, in addition to engorgement and distension of the blood-vessels, nerve cell changes consisting principally in swelling of the nuclei and peripheral

chromatolysis. These lesions are most marked in the motor cells of the spinal cord, but they exist also, though less pronounced, in the cells of the cortex.[1]

Treatment. — This of course varies with the different forms. Maniacal or delusional drunkenness requires strict watching and immediate isolation; the comatose form requires the use of external and internal stimulation (friction, ammonium, ether, caffein).

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[1] Marinesco. Semaine médicale, June 14, 1899.

CHAPTER IV.

CHRONIC ALCOHOLISM.

Chronic alcoholism manifests itself: (1) in permanent symptoms (the chronic stigmata of alcoholism), and (2) in episodic accidents.

I. Permanent Symptoms.

The permanent symptoms are psychic and physical.

A. PSYCHIC SYMPTOMS.

There is enfeeblement of all the psychic functions.

Intellectual sphere. —*Intellectual activity* and *capacity for work* are diminished. The patient becomes dull, negligent, and clumsy.

The disorders of memory consist in definite *retrograde amnesia* by destruction of impressions, associated with more or less marked *anterograde amnesia.* The former follows the general law of amnesia. Its course is slowly progressive; but it is rare for it to reach as complete a development as it does in general paresis. The anterograde amnesia renders it difficult or even impossible for the patient to acquire new impressions; thus *the stock of ideas* becomes more and more impoverished.

The *judgment* is constantly affected: the patient realizes but imperfectly his condition and the importance and significance of his acts.

Emotional sphere. — As in most affections with a basis of intellectual enfeeblement, we find in chronic alcoholism *indifference* associated with *morbid irritability.*

The chronic alcoholic is not at all concerned with his ruined business, the misery of his family, or the compromise of his honor. Only the desire for alcohol can still arouse him from his mental torpor. The atrophy of the moral sense, which in these cases goes hand in hand with the general indifference, is such that in order to procure his favorite drinks the patient does not hesitate to make use of the most unscrupulous means and to associate with the vilest characters. If he still works, he spends his entire salary for drink. If he does not work, as is the rule in such cases, he accumulates debts in the lowest drinking-dens, extorts from his relatives what little money they may have earned by hard labor, and he may even resort to stealing.

The *irritability* and the *impulsive tendencies* give rise to violent, terrible outbursts of anger, and often to assaults and attempts at murder.

Delusions may appear at times, almost always those of persecution or of morbid jealousy. When they become more developed and acquire a certain fixedness they constitute alcoholic delusional insanity which we shall study later on.

Still the patient's obscure consciousness presents at times a temporary lucidity. Strong remonstrances of friends or grave disorders of the general health

may give birth to repentance. The unhappy subject regrets his excesses, declares himself a great sinner, swears by all that is holy that he will not take another drop of wine or liquor, and announces his intention to join a temperance association. These good resolutions are carried out for several days, weeks, or even months; but almost always the patient falls again: his feeble will gives way and he can struggle no longer. He is in a vicious circle: he drinks because his will is weak, and his will is weak because he drinks.

When they attain a certain degree of intensity, the mental disorders which I have sketched constitute *alcoholic dementia.*

Alcoholic dementia is slowly *progressive.* It takes years to become fully established. Moreover,—and this is a highly important feature,—it ceases to progress with the cessation of the alcoholic excesses.

B. PHYSICAL SYMPTOMS.

The *sleep* is diminished, restless, disturbed by unpleasant dreams. The patient is apt to dream that he is at his occupation (occupation-dreams); the work is pressing, but in spite of his diligence he is always behind and the results are unsatisfactory. At other times veritable dramas are enacted: assassins pursue him, rats run at him, snakes and monstrous spiders creep over him (zoopsia). These dreams present all the characteristics of delirium tremens, which has been aptly called a prolonged dream. Sometimes the patient wakes up in the midst of his nightmare with his head heavy, the body covered with perspiration, still doubting the inanity of his terrors.

Attacks of vertigo and flashes of light, which often precede and usher in apoplectiform attacks, occur as a result of the disordered condition of the cerebral circulation.

The motor disturbances consist in muscular weakness, chiefly marked in the lower extremities, a tendency to lassitude, and a constant *tremor* affecting especially the tongue and the hands; the digital tremor is rendered very apparent when the patient holds out his hand and slightly spreads out his fingers: it is a fine, vertical tremor, not very rapid.

The *tendon reflexes* are sometimes exaggerated, but much more frequently diminished or abolished; the *cutaneous reflexes* are usually exaggerated (plantar reflex), especially in intoxications by the essences (absinthe); sometimes they are abolished; the *pupils* are paretic and sometimes slightly myotic. Occasionally there is a slight degree of strabismus or of ptosis. *Vision* is frequently impaired, due to retrobulbar neuritis; there is diminution of the acuteness and there may be a "central scotoma having the shape of an ellipse the long axis of which is horizontal" (Babinski).

Cutaneous sensibility is reduced in the large majority of cases; the hypoæsthesia is often unilateral; in such cases it is associated with other hysteroid manifestations: hysterogenic zones, globus hystericus, absence of the pharyngeal reflex.

Among the disorders of *deep sensibility* are to be noted numbness, tingling, hyperæsthesias of portions of muscles which are painful on pressure or are cramped; dull pains with lancinating paroxysms resembling the lightning pains of tabes.

The motor and sensory disturbances, whatever their distribution may be, are always due to *peripheral polyneuritis* which is a constant manifestation of chronic alcoholism.

The *gastro-intestinal disorders* are manifested by anorexia, pyrosis, "dry retching" in the morning, slow and painful digestion, and constipation.

The *liver* is often enlarged, and so is also the spleen. The true alcoholic cirrhosis is sometimes met with, but assumes a special aspect, the principal peculiarity of which is absence of ascites.

Diagnosis.—Chronic alcoholism is to be differentiated chiefly from those diseases in which there is intellectual enfeeblement. The question of differential diagnosis will be considered in connection with each of these: general paresis, senile dementia, and dementia præcox.

Prognosis.—This is always grave. The symptoms of intellectual enfeeblement once established are not likely to become abated. The timely suppression of alcohol prevents their appearance or, if they are already present, arrests their progressive course. Unfortunately this is very difficult to accomplish.

Pathological anatomy.—The arterial system is the seat of atheromatous degeneration the intensity and extent of which are variable; it affects especially the arteries of the cerebrum. Atheromatous changes in the arteries at the base are frequent, though not constant. The arterioles and capillaries always present a state of degeneration characterized by the presence of granular masses containing nuclei, which indicate their cellular origin.

The nerve-cells undergo "a certain degree of granulo-

pigmentary and fatty degeneration." [1] The nerve-fibers, especially the tangential and commissural fibers, are partially atrophied.

The extent of the lesions in the nervous elements is proportionate to that of the intellectual enfeeblement. Therefore it is especially marked in cases of advanced dementia.

The organs of the vegetative functions present the usual lesions of alcoholism: myocarditis, interstitial nephritis, alcoholic gastritis, fatty degeneration of the liver. The hepatic lesions have become of special interest since Klippel has shown that they are the immediate cause of certain deliria occurring in alcoholics.

Etiology. — How does one become an alcoholic? This question resolves itself into two other questions, as follows:

1. Why does a given individual drink alcohol in injurious doses?

2. Why are certain nervous systems more susceptible than others to the poisonous action of alcohol?

It would require a volume to reply fully to the first question; indeed, it would mean a solution of the gigantic problem of alcoholism in its social relations. According to Kraepelin, heredity seems to play a certain rôle. The tendency to alcoholic excesses is transmitted to descendants. Féré also states that "to become an alcoholic one must be alcoholizable; the mere indulgence in fermented beverages is not in itself sufficient." This factor is of some importance, though slight as compared with that of the *social factors*.

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[1] Klippel. *Du délire alcoolique.* Mercredi médical, Oct., 1893.

Among the latter the most powerful is undoubtedly the widespread *ignorance of the true action of alcohol*, as well as the false, disastrous notion prevailing among all classes of society that alcohol gives force and is therefore indispensable to the workingman in the performance of hard labor. Though it is to-day a well-established fact in the medical and scientific world that alcohol produces but an illusion of force, and that the sense of increased energy which it gives is but a morbid subjective phenomenon, this idea is still looked upon by the public as an innovation of doubtful certainty, "an invention of the doctors."

To ignorance is joined the element of *suggestion*. There can be no doubt that many individuals begin to drink by chance or by example. For a laborer it is almost impossible in his social intercourse to escape alcoholism, even though he may be aware of its dangers. His comrades drag him into the saloons, which constitute perpetual temptations on his way. Refusal to accept their invitations exposes him to their ridicule and to their ill-treatment, and condemns him to the isolation of a social outcast; here, as everywhere else, "to do as others do" is the great principle that governs the individual and obliges him to conduct himself against his own interest and even against his own inclinations.

Among the social factors there are a great many special factors one of which deserves special mention, namely, grief. Some alcoholics abandon themselves to drink on account of financial ruin, others because of domestic unhappiness, etc. However, it is to be remembered that very often patients claim their misfortunes to have been the cause of their intem-

perance, while in reality they are the effect. The drunkard pretends that he drinks to find relief from his domestic troubles, while in fact his intemperance has caused them.

We now have to answer the second question: Why does alcohol exert a rapid and intense action upon certain nervous systems, while others resist successfully much greater excesses? — It is here that individual predisposition comes into play.

Like the symptoms of acute alcoholism, those of chronic alcoholism appear chiefly in *predisposed* individuals; and the greater the predisposition the more rapidly do these symptoms develop. We see daily in general hospitals patients presenting atheroma of the arterial system, alcoholic cirrhosis, etc., and showing but slight if any nervous or mental disorders; while in insane asylums patients are admitted whose alcoholic excesses have been relatively slight and whose nervous systems have nevertheless already suffered irreparable damage. The quality of the soil is therefore of primary importance.

The pathogenic action of alcohol is also favored by all the factors which diminish the resistance of the organism, such as stress, grief, want of sleep, and acute or chronic infectious diseases (tuberculosis). Thus we often encounter, associated in the same subject, the abuse of alcohol, predisposition, and debilitating influences.

It would be useful to know which among the alcoholic beverages produce so great a toxic action as to be particularly responsible for the production of alcoholism. Clinical evidence seems to show that the principal

factor in alcoholism is the *quantity* and not the *quality* of the beverage ingested. The experiments of Joffroy and Serveaux have shown clearly that alcoholic intoxication is due to *ethyl alcohol* itself, and not to the impurities often associated with it. Therefore all fermented beverages may cause alcoholism: liquors, alcoholic tonics, wines, beers, ciders, the alcohol of beverages as well as that of substances used in the industries. However, "a given quantity of alcohol is more toxic the more concentrated it is; for this reason the stronger alcoholic beverages play a prominent rôle in the production of alcoholism." [1]

The essences, particularly the essence of absinthe, have been claimed to be especially prone to produce alcoholic epilepsy. This opinion, based chiefly upon experiments, has not been fully confirmed clinically.

Treatment. — *Prophylaxis* of alcoholism is incumbent chiefly upon *education* and *legislation*. Anti-alcoholic education should be given at home, at school, in the army, and in the colleges. Its aim is to show: 1. that alcohol is a poison; 2. that its even moderate use is never beneficial; and 3. that it is very often dangerous. Strict regulation of the sale of alcohol may also give excellent results. It is due to energetic legislative measures that the frightful progress of alcoholism has been checked in Sweden and in Norway.

Alcoholism, once established, requires no other treatment than *complete abstinence* from all alcoholic

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[1] Antheaume. *De la toxicité des alcools*. Thèse de Paris, F. Alcan, 1897. This work contains the results of the experiments of Joffroy and Serveaux.

beverages. Generally this can only be enforced in a hospital for the insane, or better still, in a special asylum for inebriates.[1] The patient, on being cured of his drinking habit and returned to normal life, would do well to join a society for total abstinence where he will find the support which his wavering will power is still in need of.

II. Episodic Accidents.

The episodic accidents of chronic alcoholism may be acute or subacute, and are of four kinds: delirium tremens, alcoholic hallucinosis, the polyneuritic psychosis, and alcoholic epilepsy.

The polyneuritic psychosis is to be studied later on; the symptoms of this disease are the same whether it results from an infection, from an auto-intoxication, or from the abuse of alcohol.

Alcoholic epilepsy presents the same clinical features as essential epilepsy. The convulsions often follow alcoholic excesses, from which they are separated by an interval of twenty-four hours and sometimes longer. They may also be associated with acute intoxication, so that they are dependent at once upon alcoholic epilepsy proper and upon acute intoxication. The prognosis is variable. Though the convulsions usually disappear with the suppression of alcohol, still in many cases they persist and the subject behaves like an or-

[1] Sérieux. *Les établissements pour le traitement des buveurs en Angleterre et aux États-Unis. Projets de création d'asiles d'alcooliques en Autriche et en France.* Bullet. de la soc. de méd. ment. de Belg., 1895. — By the same author. *L'assistance des alcooliques en Suisse et en Allemagne.* Ibid. Also *L'Asile d'alcooliques de département de la Seine.* Ann. méd. psych., 1895, Nov.–Dec.

dinary epileptic. Alcoholic intoxication thus resembles in its after effects certain infectious diseases,[1] notably typhoid fever, which are apt to leave epilepsy as a sequel.

Analogous to the states of obscuration and the absences of epilepsy are the states of transient subconsciousness which are occasionally met with in alcoholics, and in the course of which the patients may commit criminal acts.[2]

Of delirium tremens and of alcoholic hallucinosis we shall make a more detailed study.

A. DELIRIUM TREMENS.

The *prodromata* consist in an accentuation of the symptoms of chronic alcoholism. The *sleep* is more than ever disturbed by nightmares, preceded by painful hypnagogic hallucinations, and reduced in the last days before the attack to a vague somnolence. Violent headaches and a sort of inexplicable uneasiness usher in a grave affection. Frequently the patient, divining the cause of the threatening storm, suppresses the alcohol; in vain, however, for the attack almost always breaks out in spite of the tardy abstinence.

Psychic symptoms. — These have been admirably analyzed years ago by Laségue and more recently by Wernicke. Three chief symptoms dominate the scene: disorder of consciousness, hallucinatory delirium, and motor excitement.

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[1] Dide. *Valeur de la fièvre typhoïde dans l'étiologie de l'épilepsie.* Revue de médecine, Feb. 1899.

[2] Moeli. *Ueber die vorübergehenden Zustände abnormen Bewusstseins in Folge von Alkoholvergiftung und deren forensische Bedeutung.* Allgem. Zeitsch. für Psychiat., Nos. 2 and 3, 1900.

The *disorder of consciousness* involves exclusively the notion of the external world, i. e. allopsychic orientation, leaving intact the notion of personality, i.e. autopsychic orientation (Wernicke).

Illusions and *hallucinations* are constant and at times incessant. They present two general characteristics: (1) they are *painful;* (2) they are *combined* in such a manner as to form complete scenes and create around the patient a whole imaginary and often fantastic world. They affect all the senses, but the most interesting among them are those of *vision* and of *general sensibility.*

The visions of delirium tremens are always mobile and animated. They form an uninterrupted succession of strange, painful, or terrifying scenes. At the same time that the patient has visions of assassins or of ferocious and horrible animals, he feels their blows, their bites, or their repulsive contact: the murderer's dagger or the fangs of dogs or of tigers sink into his flesh, spiders run over his face, and snakes slip and crawl under his clothes.

Two principal forms of the delirium may be distinguished: (*a*) occupation delirium, and (*b*) persecutory delirium.

(*a*) *Occupation delirium.* — The patient imagines that he is amongst familiar surroundings and at his usual occupation. The hallucinations possess remarkable distinctness and intensity: the cab driver leads his horses, urges them on, whips them, and runs over pedestrians who do not get out of his way quickly; the café waiter waits upon his clients, receives the money, and shows them to vacant seats. Like the dreams of the alco-

holic this occupation delirium is always of a painful character.

(*b*) *Persecutory delirium.* — The psycho-sensory disorders assume a terrifying character. Grimacing and horrible forms are seen in the folds of the curtains, upon the window-panes, or upon the walls. Assassins come out of every corner; the patient hears clearly their threats and abuses and describes their costumes and their weapons. He sees frightful and fantastic animals; rats, snakes, gigantic tigers fill the room, constantly changing their shapes and throwing themselves upon the wretched subject, who repels them with desperate efforts. An odor of poison proceeds from all sides; the food has a putrid taste.

The *motor activity* is at times very violent. The patient walks to and fro in the dormitory or in his room, seeks his clothes, strikes the walls to open a passageway for his escape, emits cries of terror; or he whistles and sings, assuming in the intervals a conversational tone, as he imagines himself surrounded by his acquaintances. The movements, though sudden and awkward, always have a psychic origin (Wernicke); it is true that they are determined by imaginary representations and sensations, but they invariably present the character of *purposeful acts.* The patient who believes himself to be in his workshop goes through the regular movements necessary for the performance of his habitual work; another, the victim of terrifying hallucinations, executes the movements of flight or of defense.

On viewing broadly all the preceding symptoms we observe that the hallucinations of delirium tremens are like a *dream in action.* Just as a sleeper can be awak-

ened, so can the patient be momentarily roused from his delirium by a sudden interpellation. One then obtains correct responses, so that the patient may create the impression of a normal individual. But as soon as he is left alone he relapses into his delirium and agitation.

Physical symptoms. — The *tremor* of chronic alcoholism becomes exaggerated so that there is a shaking of the entire body.

The *speech* presents a characteristic tremulousness.

At times a slight degree of syllabic stuttering, paraphasia, facial paresis, or even hemiparesis appears, showing the *participation of the projection centers* in the morbid process, and thus establishing a point of contact between delirium tremens and general paresis, — the psychic disease in which the projection centers are most profoundly affected.[1]

The *tendon and cutaneous reflexes* are usually exaggerated.

A certain degree of *hyperæsthesia* is the rule. The morbid irritability of the psycho-sensory centers explains the facility with which it is possible, by a simple suggestion or by slight mechanical stimulation, to bring forth a hallucination, even after the spontaneous psycho-sensory disorders have disappeared (induced hallucinations of Liepmann).[2]

We encounter also paræsthesias and even anæsthesias.

Fever is almost a constant symptom; its presence furnishes an excellent element for prognosis even

[1] Bonhöffer. *Der Geisteszustand der Alkoholdelirantem*, 1897.

[2] *Arch. f. Psychiatrie*, XXVI.

regardless of all complications. In favorable cases the temperature does not rise beyond 39° C., reaching its maximum towards the end of the second day. Defervescence takes place either rapidly or by lysis. In grave cases the temperature rises above 39° or even 40° C.

There are also to be noted a *dyspeptic condition* of the digestive tract which is often very marked; usually slight, sometimes severe *albuminuria;* a rapid, full, and bounding *pulse* which, in grave forms, becomes small and easily compressible. Under these unfavorable circumstances the general nutrition suffers and there is loss of flesh which becomes very considerable in a few days.

Complications. — Among those involving the nervous system the most frequent are epileptiform seizures which may precede by thirty-six or forty-eight hours the onset of the delirium, or they may occur during the attack. The most formidable as well as the most common complication is pneumonia, which affects chiefly the apex of one or the other lung and assumes from the beginning a grave aspect.

Prognosis. — There are two possible terminations: *recovery* and *death.*

Recovery is the rule. It takes place within four or five days after a deep and prolonged sleep. The sleep may come on suddenly or it may be preceded by a period of calmness.

The duration of delirium tremens is sometimes *abnormally brief* (several hours), and at other times *abnormally long* (a few weeks or even months).

Convalescence is marked at the beginning by a

certain amount of confusion which persists for some time and which may or may not be associated with delusions.

Death may occur from exhaustion, from an epileptiform attack, or from some complication (pneumonia).

Diagnosis. — Attacks very similar to delirium tremens are seen outside of alcoholism, notably in senile dementia, in general paresis, and in meningitis at the cerebral convexity. In the latter affection the diagnosis is based upon the existence of specially marked and numerous focal symptoms such as Jacksonian epilepsy, strabismus, etc., upon the condition of the optic disc, and upon the course of the disease.

The points of differentiation from general paresis and from senile dementia will be studied in connection with these affections.

Pathological anatomy. — To the lesions of chronic alcoholism already considered are added *exudative hyperæmia* and *inflammatory diapedesis*, which are the expression of an acute process analogous to that observed in infections.

The *nerve-cells* lose their normal shape and structure, their angles become blunted, and their chromatophylic granulations are broken up or disappear entirely. The *nerve fibers* degenerate.

These lesions are present throughout the entire cortex, including the centers of projection. It is not rare to find also a certain degree of degeneration in the pyramidal bundles and in the posterior columns; thus we find in pathological anatomy a confirmation of the relationship which has been clinically shown to exist between delirium tremens and general paresis (Bonhöffer).

The *visceral lesions* are often dependent upon some infection which may be associated with the alcoholic intoxication, such as influenza, infection by the pneumococcus, or typhoid fever.

The *heart* is the seat of a myocarditis which in many of the fatal cases constitutes the immediate cause of death.

The *liver* presents degeneration that is so frequently met with and at times so pronounced that Klippel [1] has been led to attribute delirium tremens to auto-intoxication of hepatic origin.

The lesions in the *kidneys* are, according to Herz,[2] those of acute parenchymatous nephritis. He states that these lesions are constant. Thus delirium tremens would seem to be nothing but an attack of uræmia to which a special aspect has been imparted by the chronic alcoholism.

Pathogenesis. — Delirium tremens is not to be considered as a simple alcoholic intoxication, a sort of belated drunkenness caused by an accumulation of the poison in the organism. Its clinical aspect in fact differs radically from acute intoxication. Moreover, the attack of delirium is apt to break out even after the alcoholic excesses have been suspended for several days. Finally, the patient makes a perfect recovery, even if alcohol is administered to him in large doses during the course of the delirium.

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[1] Klippel. *Du délire des alcooliques.* (*Lésions anatomiques et pathogénie.* Mercredi médical, Oct. 1893. — *De l'origine hépatique de certains délires des alcooliques,* Ann. méd. psych., Sept. – Oct., 1894.

[2] Abstract in Centralblatt für Nervenheilkunde und Psychiatrie, May, 1898.

Some authors, Wernicke among them, attribute delirium tremens to sudden withdrawal of the alcohol. Experience does not seem to bear out this opinion; we meet daily with inveterate alcoholics in whom complete abstinence does not produce the slightest damage.

An important fact upon which Joffroy frequently insisted in his lectures is that delirium tremens often breaks out at the occasion of an accidental infection, such as influenza, pneumonia, or suppuration. Thus it seems that the disease is caused by two agencies, alcoholism on the one hand and some accidental affection, most frequently an infection, on the other hand.

By what mechanism does their combination produce this effect? — Possibly by determining an autointoxication by insufficiency either of the liver (Klippel) or of the kidneys (Herz).

It should be remembered, however, that in many cases the second factor, the accidental infection, is not found. Perhaps, reduced to some disorder possessing in itself no apparent gravity, such as an attack of gastric indigestion, it passes unnoticed.

Treatment. — Rest in bed is very useful and is applicable in the vast majority of cases. More than in any other psychosis, in this disease mechanical restraint is dangerous and must be prohibited.

The weak heart action and the poor condition of the liver and of the kidneys oblige the physician to make but very little use of hypnotics, especially in severe cases. The most serviceable and least dangerous are chloral and paraldehyde, which, administered in large doses, are of considerable value. They should

not be used without previously excluding the likelihood of collapse.

Letulle has obtained good results from cold baths.

Alcohol in some form was formerly very popular as a remedy in the treatment of delirium tremens. The practice of giving it is, however, useless, in most cases. When the patient's forces decline rapidly alcohol may be given as a stimulant.

Caffein and ether by subcutaneous injection may prevent grave cardiac disturbances.

The food should be substantial and should be such as to facilitate the elimination of toxines accumulated in the organism. A *milk diet* admirably fulfills this double indication. Sometimes it is useful to add eggs, and in cases where there is much weakness beef-juice or chopped meat may also be given.

B. ALCOHOLIC HALLUCINOSIS.

Alcoholic hallucinosis differs from delirium tremens: (1) in the predominance of hallucinations of hearing over those of sight; (2) in the absence of any marked disorder of consciousness; and (3) in its course, which most frequently presents a subacute character.

After a rather prolonged prodromal period marked, as in the case of delirium tremens, by an accentuation of the symptoms of chronic alcoholism, the patient becomes uneasy, distrustful, and suspicious. Gradually false interpretations, illusions, and persecutory ideas become established. He does not dare to leave the house, feeling that he is being watched, insulted or threatened by passers-by or followed by the police. After several days or several weeks at most hallucina-

tions of hearing appear followed often by hallucinations of the other senses.

The disease very rapidly reaches its highest development and then presents the following fundamental features:

(*a*) *Conservation of lucidity;* the patient remains well oriented, understands questions, and answers relevantly.

(*b*) *Painful character of the delusions and of the psycho-sensory disorders:* ideas of persecution of a variable nature: fear of being poisoned or assassinated, ideas of jealousy; imaginary insults or threats; frightful visions, especially marked at night, grimacing figures, ghosts, detectives coming to take the patient into custody, executioners, etc.; a taste or an odor of poison or of fæcal matter; sensations of scalding, pricking, or electric currents; motor hallucinations. These latter phenomena, but slightly marked in the majority of cases, point to a grave prognosis when they assume a certain intensity; they often forebode a very prolonged course of the disease and indicate the existence of a tendency towards intellectual enfeeblement. Hallucinations of taste and smell often cause refusal of food.

(*c*) *Tendency to systematization:* the subject seeks an explanation and a cause for the persecutions of which he is the subject. However, the systematization is of rapid development and is not always very accurate, so that it resembles but imperfectly that of chronic delusional insanity.

(*d*) *Depressed mood and aggressive tendencies:* the patient, profoundly irritated, wreaks his vengeance

upon innocent victims, being determined to defend himself against the persecutions of his enemies or to escape them by any possible means. If such a patient desires to die it is not, as is the case with other classes of patients, for the purpose of expiating some crime or of finding relief from remorse, but solely to escape the frightful tortures prepared for him by his enemies. Often he transforms his house into a veritable arsenal and, unfortunately, does not limit himself to simple demonstrations, but makes actual use of his weapons.

The somatic disorders of chronic alcoholism are all present in this affection. Sleep is diminished and filled with the pathognomonic dreams.

The urine often contains a trace of albumen.

When ideas of jealousy predominate the affection merits the special name of *alcoholic delirium of jealousy*. Hallucinations in such cases occupy a secondary position, without, however, being entirely absent in any case. The delusions are almost always absurd: the proofs that the patient furnishes of his wife's improper conduct are childish.[1]

As a general rule an attack of alcoholic hallucinosis tends towards *recovery*. This takes place gradually after several weeks or at most several months. The ideas of jealousy are the most tenacious; they may persist for a long time after the suppression of alcohol.

The *prognosis* is, however, not altogether favorable, firstly because relapses are to be feared, and secondly because each successive attack leaves a noticeable

[1] Villers. *Le délire de la jalousie.* Bruxelles, 1899. — Parant. *Le délire de la jalousie.* Thèse de Paris, 1901.

trace upon the intelligence and accelerates the course of alcoholic dementia.

It is of great importance to make the differential *diagnosis* between alcoholic hallucinosis and the other affections in which systematized delusions are encountered, viz., dementia præcox, chronic delusional insanity, and paranoia. The reader is referred to the respective chapters devoted to these diseases for the points of differentiation.

The *treatment* is that of chronic alcoholism. The violent reactions of the patient usually necessitate commitment. Attacks of excitement are to be treated by the usual methods.

CHAPTER V.

CHRONIC INTOXICATION BY THE ALKALOIDS.

§ 1. MORPHINOMANIA.

CHRONIC intoxication by morphine brings about a condition known as *morphinism*. Morphinism constitutes *morphinomania* when the drug has become a necessity to the organism, so that its suppression causes a train of physical and psychical disturbances known as the *symptoms of abstinence*.

Etiology.—The study of the etiology of morphinomania involves the consideration of two distinct questions: (1) What individuals are apt to become morphinomaniacs? (2) How does one become a morphinomaniac?

(1) *What individuals are apt to become morphinomaniacs?*

Morphine is no longer, as it was formerly, an aristocratic poison limited to the upper classes. "Even rural populations are no longer exempt from the contagion; and the fault is chiefly with the physicians." [1]

Morphinomania is especially frequent among those who, on account of their profession or surroundings,

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[1] Chambard. *Les morphinomanes*. Bibliothèque médicale Charcot-Debove.

can readily procure the poison; such are physicians, their wives, medical students, pharmacists, nurses, and laboratory attendants.

As in the case of alcoholism, the character of the soil is here also an important factor. The less energetic and mentally stable the individual is the more likely he is to yield to the seductive influence of the poison. Thus we find that morphinomaniacs are often degenerates.

(2) *How does one become a morphinomaniac?* — In many ways, but chiefly:

(*a*) Through *medication:* many subjects receive their first injection for the relief of some painful affection as hepatic colic, neuralgia, or tabes.

(*b*) Through *curiosity:* this occurs especially among degenerates, idlers, individuals who are tired of all ordinary pleasures and are longing for new sensations, and whose unfortunate tendency is still farther stimulated by the example and proselytism of old morphinomaniacs.

(*c*) Through the craving for a *sedative* or for *relief from mental suffering:* this occurs in the overworked (soldiers in time of war or young people during difficult examinations) and in those who are driven by some misfortune or ill-luck to seek in morphine a consolation for their sorrows and disappointments.

Doses. — The action of the poison becoming less effective in time, the doses necessarily increase more or less rapidly. The maximum dose taken daily by different patients varies greatly. One morphinomaniac, reported by Pichon, was in the habit of taking nine grams daily. Most patients limit themselves to smaller doses. Of the one hundred and twenty subjects com-

prised in the statistics of Pichon eighty-four took from 0.40 to 1.20 grams daily.

The methods of morphinomaniacs. — The places usually selected for the injections are the arms, forearms, thighs, or legs; the next in frequency are the abdomen and the chest. Very frequently these regions are covered with scars from abscesses caused by septic injections. These scars constitute, so to speak, the stigma of morphinomania and often enable the physician to establish the diagnosis in spite of denials on the part of the patient

Many morphinomaniacs take their injections without regularity or precaution and at any opportunity; others, in true epicurean fashion, select the moment and conditions when they can enjoy most profoundly their favorite pleasure. Some, again, have their hours regularly fixed, use only accurately prepared solutions of a certain strength, and take all antiseptic precautions; many take their daily quantity in divided doses; others take a single large dose daily in order to obtain the most intense effect.

SYMPTOMS AND EVOLUTION.

According to Chambard four periods may be distinguished in the career of a morphinomaniac, which succeed each other by imperceptible transitions.

First period: initiation or euphoria. — It has been aptly called the *honeymoon of the morphinomaniac.* Under the influence of the morphine physical pains, if they exist, disappear or become abated, the organic functions become more active, and the mind lapses into a pleasant reverie; ideas form themselves without any effort and

combine "to form ingenious conceptions, elaborate resolutions, vast projects which, alas, are never likely to last through the day"; depressing thoughts disappear and life assumes a smiling aspect.

This euphoria is identical with that which is produced by opium and of which Thomas De Quincey has given such an enthusiastic description:

"O just, subtle, and all-conquering opium! that, to the hearts of rich and poor alike, for the wounds that will never heal, and for the pangs of grief that 'tempt the spirit to rebel,' brings an assuaging balm; — eloquent opium! that with thy potent rhetoric stealest away the purposes of wrath, pleadest effectually for relenting pity, and through one night's heavenly sleep callest back to the guilty man the visions of his infancy, and hands washed pure from blood; — O just and righteous opium! that to the chancery of dreams summonest, for the triumphs of despairing innocence, false witnesses, and confoundest perjury, and dost reverse the sentences of unrighteous judges; — thou buildest upon the bosom of darkness, out of the fantastic imagery of the brain, cities and temples, beyond the art of Phidias and Praxiteles, beyond the splendours of Babylon and Hekatómpylos; and, 'from the anarchy of dreaming sleep,' callest into sunny light the faces of long-buried beauties, and the blessed household countenances, cleansed from the 'dishonours of the grave.' Thou only givest these gifts to man; and thou hast the keys of Paradise, O just, subtle, and mighty opium!"

Second period: hesitation. — Many subjects, conscious of their danger, make efforts to escape from it. They diminish the doses, reduce the number of injections, etc. Some even completely discontinue the use of the drug permanently or temporarily.

The period of hesitation is not constantly present; many patients by reason of their ignorance or lack of determination pass directly from the first period to the third.

Third period: morphinomania proper. — The poison

has now impressed its stamp upon the organism and has established certain *permanent symptoms*. Moreover, its suppression gives rise to a series of characteristic phenomena, the *symptoms of abstinence*.

(*A*) *Permanent symptoms*. — (*a*) *Psychic phenomena*. — These consist in a general weakening of psychic activity, and are manifested in the *intellectual sphere* by sluggishness of association and impairment of attention contrasting with intact orientation and perfect lucidity, and by retrograde amnesia of reproduction; representations are in some way inhibited but not destroyed.

In the *emotional sphere* there are indifference and atrophy of the moral sense. All the aspirations of the patient reduce themselves to a single idea, that of procuring morphine by any possible means; disregard for conventionalities, swindling, falsehoods, violence, all seem to him permissible. Many morphinomaniacs obtain their morphine from the druggist on false prescriptions, others sell their household articles to purchase morphine for the money.

In the *sphere of the reactions* there is always very marked *aboulia*. The patient is conscious of the ruinous results of his inactivity, but has not the power to overcome it. This symptom appears early and together with the indifference forms a characteristic feature of the mental state in morphinomania.

(*b*) *Physical symptoms*. — The *general nutrition* always suffers: loss of flesh, pallor of the skin, etc.

The *circulatory apparatus* shows general atony. The cardiac impulse is weak; the peripheral circulation is sluggish; there are transient œdemas.

The *temperature* is often subnormal. A case of morphine fever has, however, been reported (Levinstein).

Motility: general muscular asthenia; a tendency to fatigue; tremors: "slow, regular oscillations resulting from a twisting movement of the limb upon itself."[1]

Sensibility: slight hyperæsthesia which is at times unilateral; diminution of the acuteness of vision, often dependent upon "pallor of the optic disc, which may advance to atrophy."[2]

The *pupils* are frequently myotic.

The *tendon reflexes* are occasionally diminished.

(*B*) *Symptoms of abstinence.* — When the hour for his injection has passed the morphinomaniac becomes restless, his expression becomes anxious, and his respirations accelerated. A state of *anxiety* soon appears, accompanied by a very marked inhibition of all the psychic functions. The patient abandons his unfinished work or conversation and leaves, complaining that he is unable to bear the tortures of which he is a victim. At the same time there is the appearance of the pathognomonic *somatic symptoms:* extreme pallor of the face, acceleration and weakening of the pulse, general prostration, cold sweats, and spells of yawning. If abstinence continues the condition may become alarming: obstinate diarrhœa appears and collapse is threatened.

No matter how grave the symptoms become an injection of morphine always affords instantaneous relief.

Occasionally the mental symptoms present all the features of a veritable acute psychosis: agitation, anxiety, persecutory ideas, psycho-sensory disorders,

[1] Jouet. Quoted by Chambard, *loc. cit.*

[2] Pichon. *Le morphinisme,* 1890.

excitement simulating that of mania; these may be associated with hysteriform or epileptiform attacks.

Fourth period: cachexia. — The symptoms of the preceding period become more marked. The psychic disaggregation in some cases resembles true dementia. The craving for the drug is greater than ever. Loss of flesh reduces the patient almost to a skeleton; the stomach rejects all food and a permanent and intractable diarrhœa sets in; the blood pressure becomes low, the cardiac impulse grows weaker and weaker, the pulse becomes small, thready, and irregular; renal changes, which are frequent, give rise to albuminuria.

Numerous complications are apt to appear, rendering the prognosis still more serious: pulmonary tuberculosis, furunculosis, phlegmons hasten the fatal termination, which occurs at the end of the fourth period.

Associated intoxications. — The intoxicants, the abuse of which is often associated with morphine, are chiefly ether and cocaine. Cocainomania will be made the subject of a special section. Ether, absorbed from the respiratory tract or from the digestive passages, brings about a state of euphoria analogous to that produced by morphine. In certain cases there is a period of excitement which may reach the intensity of delirium and which is followed by comatose sleep.

Treatment. — Its aim is *discontinuance of the morphine.* This may be attained by three methods: the sudden method (Levinstein), the rapid method (Erlenmeyer), and the gradual method (the so-called French method).

The suppression of morphine or demorphinization cannot be carried out outside of a sanitarium for the following two reasons: (1) because the patient should be, in case of threatened collapse, within immediate reach of medical aid; (2) because only strict supervision can prevent the patient from procuring the drug clandestinely.

The method of choice is rapid suppression. "It is a fact, recognized to-day by all physicians experienced in the treatment of morphinomania, that rapid suppression is the best method of treatment."[1] The period of demorphinization lasts from five to twelve days. The principle consists in diminishing the dose each day by one half of that administered on the preceding day, and finally, on reaching a minute ration, completely suppressing the drug. It is in the latter days of the suppression that the symptoms of abstinence appear with the greatest intensity. Patients who descend without much difficulty from one gram or more to several centigrams experience grave disturbances when they are deprived of this minute allowance.

Adjuvant therapy. — The *diet* should be tonic and reconstructive. In the cases of marked cachexia it is advisable to improve the state of the general nutrition before complete demorphinization.[2]

The digestive tract and the heart demand special attention.

Gastro-intestinal disorders may be prevented by the

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[1] Sollier. *La démorphinization.* Presse médicale, April 23 and July 6, 1898.

[2] Joffroy. *Traitement de la morphinomanie.* Gaz. hebd. de Méd. et de Chirurgie, 1899 and 1900.

use of bicarbonate of soda (2–6 grams daily), and cardiac failure by heart stimulants, such as caffein, strophanthus, and, if necessary, digitalis.

A morphinomaniac cannot be considered recovered until a long time has elapsed after the suppression of the drug. The return to ordinary life is for him a critical moment; for this reason isolation in a sanitarium should be continued for several weeks after the last injection.

This prolonged detention is further justifiable by the grave complications, notably fatal epileptiform attacks, which may occur long after complete demorphinization.

In spite of all these precautions permanent cures are the exception and relapses are the rule.

§ 2. Cocainomania.

It seems that cocainomania first appeared in 1878, when Bentley made the fatal suggestion of treating morphinomania by means of injections of cocaine.

Like morphine, cocaine produces immediately after its absorption a peculiar state of euphoria characterized chiefly by a sense of vigor and energy. The craving becomes established after the first few injections, much sooner than in the case of morphine.

I shall describe successively the habitual mental state of the cocainomaniac and cocaine delirium.

Habitual state. — Normal activity is replaced by *indolence*, and affectivity by *indifference*. All the faculties are dulled. The memory is paralyzed, there being both anterograde amnesia by default of fixation and retrograde amnesia by default of reproduction.

The mood is usually sad, gloomy, and pessimistic, the will power is nil.

This state of general enfeeblement is interrupted by *sudden outbreaks of gaiety and feverish activity*, which disappear very soon, leaving behind them an intensified psychasthenia.

The sensory organs are the seat of *hyperæsthesia*, so that even slight excitation produces pain. At intervals hallucinations appear, which constitute the germ of the delirium proper. Conscious in the beginning, the hallucinations are later accepted by the subject as real sensations.

The *general nutrition* is poor. The *skin* assumes an *earthy* color; the *weight is reduced;* the process of *digestion is sluggish and painful;* and there is *diarrhœa* alternating with *constipation.*

Cocaine delirium. — It is a delirium of a painful character associated with delusional interpretations; its main features consist in psycho-sensory disorders which, in spite of their extraordinary distinctness, are coexistent with perfect *lucidity.* The illusions and hallucinations may affect all the senses, but especially vision, touch, and the muscular sense.

Objects change their shapes and are constantly moving. A patient of Saury's [1] felt himself assailed by a swarm of bees which he could see and feel. Many cocainomaniacs feel worms creeping over their bodies or coming out of their flesh; they see them, seize them with their fingers, and crush them under their feet. Many also perceive imaginary movements: the ground

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[1] Saury. *Cocaïnomanie.* Ann. méd. psych., 1889.

shakes beneath them, their bed is upset, or the house they are in, swept by a flood, floats upon the waves. Hallucinations of hearing, taste, and smell, though not rare, occur less frequently than the preceding and present no special characteristics.

Sometimes the delusions assume the form of *morbid jealousy*, as in alcoholic insanity.

The *reactions* of the patient are governed by the delusions and are often violent.

The *duration* of the attack is brief, several weeks at the longest, and in some cases but a few days. I have seen a typical case of cocaine delirium terminate in forty-eight hours.

The *treatment* consists in suppression of the poison, which can in the great majority of cases be accomplished by the sudden method without serious inconvenience.

CHAPTER VI.

PSYCHOSES OF AUTOINTOXICATION, ACUTE AND SUBACUTE.

§ 1. Uræmic Delirium.

Uræmic delirium presents the usual features of toxic deliria: more or less complete clouding of consciousness, disorientation, phenomena of psychic automatism, among which psycho-sensory disorders occupy a prominent position.

The delusions, the emotional tone, and the reactions enable us to distinguish two principal forms of uræmic delirium: an expansive form and a depressed form.

Expansive form.—The patient is a great personage, a general, a prince; he assists at a grand review, gives commands to his officers, or orders sixteen horses to be harnessed to his carriage; the Pope presents him with the imperial crown.

Often the delirium takes a *mystic* form: the heavens open, celestial music is heard, or angels descend on an immense ladder as in Jacob's dream.

Depressed form.—Melancholy ideas combine with ideas of persecution and hallucinations of an unpleasant character. The patient imagines people are searching for him to drag him to the scaffold; the house is on fire; an odor of sulphur is diffused through the air.

Whatever the form of delirium, the reactions are often very powerful and give rise to violent, at times terrible, agitation. Often, also, in the depressed and mystic forms, there is marked stupor with a tendency to cataleptoid attitudes.[1]

As to the development of the attack, we distinguish an *acute form* characterized by severe symptoms: intense agitation or, on the contrary, profound stupor, incessant hallucinations, extreme confusion with clouding of consciousness, etc.; and a *subacute form* characterized by symptoms of lesser intensity and by periods of comparative lucidity alternating with delirious periods.

In some exceptional cases of uræmic delirium of the subacute form the delusions become systematized and may thus be misleading in the diagnosis.

The mental symptoms of uræmic delirium present no pathognomonic features and are merely a manifestation of poisoning of the cerebral cells. The *diagnosis* must be made from the accompanying somatic symptoms: convulsive attacks, cardiovascular disorders, dyspnœa, œdema, pupillary manifestations,—myosis and paresis of the pupils,—diminution of the specific gravity and of the toxicity of the urine, albuminuria, anuria, oliguria, or polyuria.

Uræmic delirium is often very similar to delirium tremens. It seems that the two affections may even be combined. Brault [2] is of the opinion that uræmia, like traumatism or pneumonia, may act as the exciting

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[1] Brissaud. *De la catatonie brightique.* Sem. méd., 1893.—Cullerre. *Sur un cas de folie urémique consécutif à un rétrécissement traumatique de l'urèthre.* Arch. de neurol., Vol. XXVII, No. 89.

[2] *Traité de médecine.* Charcot-Bouchard. *Maladies des reins.*

cause of an attack of delirium tremens. We have already seen how much importance is attributed by some authors, notably by Herz, to uræmia as a pathogenic factor in delirium tremens.

The *prognosis* depends upon the severity of the somatic disturbances.

The *treatment* is that of uræmia in general: milk diet, blood-letting, purgatives, and diaphoretics.

§ 2. The Polyneuritic Psychosis.

The polyneuritic psychosis or Korsakoff's [1] disease is an affection constituted by the association of the phenomena of polyneuritis with specific mental disorders, among which *amnesia of diverse forms constitutes a preponderant feature.*

Etiology.—The polyneuritic psychosis forms from an etiological standpoint a transition between infectious psychoses, toxic psychoses, and psychoses of exhaustion. In fact infections, intoxications, and exhaustion each have the power of inducing the disease: it may supervene in the course of chronic alcoholism, or following a profuse hemorrhage or an infectious disease such as influenza. It is probable that all of these factors produce their effect by the same mechanism, — most likely by giving rise to a disorder of general nutrition resulting in an autointoxication.[2]

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[1] Congrès de Médecine, 1889. — Luckerath. *Beitrag zu der Lehre von der Korsakow'schen Psychose.* Neurol. Centralblatt, April, 1900.

[2] Therefore, slightly modifying the classification of Kraepelin, I have placed the polyneuritic psychosis not among the toxic psychoses proper, but among the psychoses of autointoxication.

Symptoms.—In some cases the symptoms of the polyneuritic psychosis appear gradually, without any striking phenomena at the onset; much more often the onset is acute: agitation, numerous hallucinations, and anxiety render the resemblance to *delirium tremens* so marked as to lead very frequently to errors in diagnosis. After several days the agitation subsides, but the disorientation persists and the characteristic amnesia appears together with the phenomena of polyneuritis.

The amnesia is both anterograde and retrograde.

The *anterograde amnesia* results from the total abolition, or at least a marked diminution, of the power of fixation. The patient forgets in a few moments a visit which he has received or the gist of what he has just read. On leaving the table he asks whether it is not almost time for dinner and complains of having no appetite.

The *retrograde amnesia* is purely functional, by default of reproduction; on recovery from the disease the old representations reappear intact.

The effacement of representations occurs in conformation to the law of retrogression. Depending upon the severity of a particular case, the amnesia involves the events of a more or less considerable period of time.

Pseudo-reminiscences, illusions, and hallucinations of memory fill the gaps created by the amnesia. Thus quite frequently the patient is totally unconscious of his disorder of memory and unhesitatingly replies to all questions put to him. Often also, modifying facts of which his impression is more or less vague, adjusting some details and suppressing others, the patient

narrates *imaginary occurrences* the principal features of which are their *mobility*, their easy *modifiability* by appropriate suggestions, and their being usually limited to the bounds of possibility. The latter characteristic is, however, not constant, for the fabrications in the polyneuritic psychosis may be altogether improbable or even absurd.

The following specimen has been taken from an observation made upon a case of polyneuritic psychosis due to absinthe:

Q. How long have you been here?

A. Since this morning.

Q. What were you doing yesterday?

A. I went to the market to buy some eggs. After that I went to see my sister and took dinner with her.

Q. Don't you ever go to the theater?

A. Oh, that's true, . . . I went there after work last night . . . it was very beautiful.

Q. What play did you see?

A. Really . . . just wait a minute . . . it was very beautiful . . . they sang . . . they had superb costumes . . . I cannot recollect the name of the play.

In reality the patient, who had been in the asylum during the three weeks previous, had not left his bed since his admission on account of a very marked paresis of both lower extremities.

To these pathognomonic disturbances of memory are added also *complete loss of orientation* of time and place, numerous *illusions* which often lead to mistakes of identity, and occasional *hallucinations* which are more or less fleeting.

The *emotional* tone is usually one of indifference; sometimes there is slight euphoria or undue irritability.

In spite of their intensity the psychic symptoms are in many cases not very apparent at first. The patients are quiet, understand well the questions put to them, and reply in a calm and often even in an intelligent manner. They often appear to be normal because a conversation of several minutes may not suffice to reveal the pathognomonic amnesia and disorientation.

The *signs of polyneuritis*, paresis of the lower extremities, abolition of the tendon reflexes, paræsthesias, lightning pains, hyperæsthesias of circumscribed muscular masses, — to mention only the principal ones, — vary widely in intensity. They are at times mild, while the mental disturbance may be quite marked. Possibly they may be even entirely wanting in certain cases that are perfectly typical from the psychic standpoint.

The general health is always affected to some extent. Occasionally cachexia may develop and end fatally. Also cardiac disturbances are often noted, feeble action, irregularity, etc., which in a number of cases are dependent upon a neuritis of the pneumogastric nerve.

Duration, prognosis, diagnosis. — [The *duration* of the active period of the disease is usually several months, seldom over a year. There then remains a characteristic state of mental deterioration dependent upon a persisting and more or less pronounced impairment of the power of retention, with resulting disorientation and amnesia for recent occurrences. The tendency toward active fabrications and pseudo-reminiscences becomes less marked and often disappears.

In some few cases there is partial restoration, so that the patients are again able to keep track of dates

and current events, but complete recovery is a rare exception in alcoholic cases, though it is said to be common in cases with a different etiology.

Another mode of termination, also infrequent, is *death*, which results either from cachexia or from some intercurrent complication: influenza, pneumonia, tuberculosis.

The *diagnosis* is based on (*a*) the very marked and characteristic disorders of memory; (*b*) the apparent lucidity of the patient, contrasting with the real disorientation; (*c*) the coexisting signs of polyneuritis.

Treatment. —The treatment is analogous to that of acute confusional insanity; it consists chiefly in rest in bed combined with a reconstructive diet.

It is scarcely necessary to add that abstinence from all alcoholic beverages should be rigorously enforced, especially where alcoholism is the cause.

CHAPTER VII.

PSYCHOSES OF CHRONIC AUTOINTOXICATION.

THYROGENIC PSYCHOSES.

Destruction of the thyroid gland gives rise to a peculiar autointoxication which is met with in two different clinical forms: *myxœdema* and *cretinism;* in the former the destruction of the gland occurs at an adult age, in the latter it occurs in infancy.

§ 1. Myxœdema.

The external aspect of a myxœdematous patient is characteristic. The puffed and expressionless face together with the general attitude reflect both the mental inertia and the profound disorder of general nutrition.

Psychic disturbances. — These consist chiefly in symptoms indicating a *blunting and torpor of cerebral activity,* — psychic paralysis; there is extreme sluggishness of association of ideas demonstrable by simple clinical examination as well as by psychometry; the attention is difficult to obtain and to fix; there are also retrograde amnesia by default of reproduction and anterograde amnesia by default of fixation; permanent indifference; aboulia.

The indifference is occasionally interrupted by transient attacks of irritability. Myxœdematous patients are often sulky and ill-natured.

Physical disturbances.—The sleep is diminished, replaced by permanent somnolence, and disturbed by nightmares.

The reflexes are diminished or completely abolished; all movements are sluggish, awkward, and clumsy.

But the most interesting disorders are those of the *integuments* and of the *thyroid gland.*

Integuments. —The skin is thickened and infiltrated; its surface is smooth and of a dull whiteness. On palpation it gives the sensation of waxy tissue. There is no pitting on pressure, this being a point of distinction between myxœdematous infiltration and anasarca.

The features are dulled, the eyes sunken, and the lips thickened; the wrinkles of the forehead disappear, and the naso-labial fold becomes effaced. The physiognomy is immovable and stupid. The hair of the head, eyebrows, and beard is scant, discolored, and atrophied. These characteristics are pathognomonic of the myxœdematous facies.

The hair over the entire body is atrophied. The nails become deformed and brittle.

The mucous membranes present thickening analogous to that of the skin. They are pale, anæmic, and in places cyanotic.

Thyroid gland.—On palpation one finds atrophy or even complete disappearance of the gland.

Sometimes the thyroid gland is increased in size, causing an abnormal prominence in front of the neck.

This hypertrophy, true or false, is generally transitory, and occurs chiefly in the early stages of the disease. When the swelling persists through the entire duration of the affection, it is usually the result of a cystic degeneration of the gland.

The visceral disorders do not present any characteristic features; they indicate general atony and diminished vitality of the organism: small, compressible pulse, sluggish and painful digestion, and constipation.

The **course** of myxœdema is progressive, but interrupted by frequent remissions.

If no appropriate treatment is instituted, the stock of ideas becomes diminished, the psychic inertia becomes extreme, and complete dementia is established; also the physical symptoms become accentuated and death supervenes either from cachexia or from some complication (pulmonary tuberculosis).

Treatment.—It is possible to supply, to a certain extent, the deficiency caused by atrophy of the thyroid gland by the administration of the thyroid substance of animals (almost exclusively that of the sheep), either in the crude form or in the form of pharmaceutical preparations. The thyroid substance may be administered in tablets, pills, or capsules containing it, either in the fresh state or dried and reduced to a powder. The capsules of Vigier contain ten centigrams of the fresh gland; they may be administered in doses as high as six capsules per day without inconvenience.

A glycerine extract of thyroid gland is also prepared and is known by the name of thyroidine.

Finally, Baumann and Proos have extracted from the

sheep's thyroid a substance, *iodothyrine*, which seems to be the active principle. This substance is "triturated with sugar of milk in such proportions that one gram of the mixture represents one gram of the fresh gland." [1]

Thyroid medication must be employed with great caution. Toxic symptoms are easily produced: acceleration of the pulse and respiration, headache, attacks of vertigo, and, in severe cases, a tendency to collapse. Therefore it is advisable to begin the treatment with small doses, which should be gradually increased, and promptly reduced or suspended entirely on the appearance of alarming symptoms.

The mental and physical effects of thyrotherapy are very rapid. In a few days the cerebral torpor becomes less marked, the skin reassumes its normal aspect, and the other myxœdematous symptoms become abated.

§ 2. Cretinism.

Cretinism may be defined as an arrest of somatic and psychic development dependent generally upon a goitre, and more rarely upon simple atrophy of the thyroid gland.

The affection occurs *endemically* in mountainous regions, such as the Alps, the Rocky Mountains, the high plateaus of Himalaya, Black Forest, etc., and *sporadically* in most regions.

Its *etiology* is not well known. Numerous factors are said to be capable of causing it: atmospheric humidity;

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[1] Briquet. *Valeur comparée des médications thyroïdiennes.* Presse médic., 1902, No. 74.

certain geological compositions of the soil (cretinism occurs frequently in countries where the soil is composed of schistose clay or of streaked sandstone); poor quality of the water, which in the endemic sections is poorly aerated, deprived of iodine, and charged with calcium and magnesium salts; want; heredity.

All these causes, the influence of which should be kept in view, probably only prepare the soil for the action of some specific agent still unknown. According to the opinion of Griesinger, "endemic goitre and cretinism are specific diseases produced by a toxic cause of miasmatic nature." This attitude certainly most nearly corresponds to the modern medical consensus of opinion and has at present the greatest number of adherents. In fact one cannot fail to note the similarity which exists between the etiology of endemic goitre and that of other endemic diseases of parasitic or, as Griesinger says, *miasmatic* origin, such as malaria.

The *symptoms* of cretinism usually appear in early childhood. Sometimes the onset is acute, so that the destruction of the gland is accomplished in a few days. Such was the case reported by Shields,[1] in which an acute thyroiditis caused the destruction of the thyroid gland and resulted in cretinism.

Much more frequently the process is insidious, and it is impossible to ascertain the exact date of onset.

The size of the goitre is variable. The swelling may be slight, scarcely perceptible, or so enormous as to completely disable the patient. Resulting usually from a degeneration of the thryoid gland, it becomes

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[1] *A Case of Cretinism Following an Attack of Acute Thyroiditis.* New York Med. Jour., Oct. 1, 1898.

evident at about the sixth or eighth year of age and increases up to the time of puberty or even later.

Simple atrophy of the gland is much less frequent and is seen chiefly in sporadic cases.

Physically the cretin exhibits, in addition to the changes in the thyroid gland, the following symptoms: the stature is below the normal; the face is pale, puffed, or marked precociously with senile wrinkles; the pilous system is poorly developed; the mucous membranes are pale, anæmic, and thickened; the teeth are abnormal in shape and in implantation and subject to caries; puberty is retarded or even absent, and the cretin may remain infantile all his life.

Psychically we encounter all degrees of idiocy and imbecility.[1] It seems, however, that the cretin is less impulsive, more manageable, and more capable of emotional activity than the ordinary idiot or imbecile.[2]

The brains of cretins present no known specific lesions; asymmetry and various malformations of the hemispheres are frequent.

The *treatment*[3] consists in thyroid medication, the results of which are the more perceptible the earlier it is instituted.

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[1] See Chap. XVII.

[2] Bourneville. *Progrès médical*, 1897.

[3] *Ibid.*, 1890.

CHAPTER VIII.

DEMENTIA PRÆCOX.—CHRONIC DELUSIONAL INSANITY.

§ 1. Dementia Præcox.

Under the name hebephrenia, Hecker, inspired by his preceptor, Kahlbaum, described a psychosis which develops by predilection at the age of puberty and which terminates in a peculiar state of intellectual enfeeblement.

Later Kraepelin extended the views of Hecker and added to this group catatonia,[1] which had previously been considered an independent affection, and paranoid dementia, which includes the majority of forms of delusional insanity commonly assigned to the vast and ill-defined group of paranoias. This fusion resulted in a new morbid entity: *dementia præcox.*

At the same time the problem of precocious dementia, which had already been raised by Esquirol and Morel, but was neglected since their time, has appeared anew in France. Joffroy presented in his clinical lectures cases of *juvenile dementia.* Christian also published under the title *Precocious Dementia in Young People*[2]

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[1] Kahlbaum. *Die Katatonie oder das Spannungsirresein,* 1894.

[2] Christian. *De la démence précoce des jeunes gens.* Contribution à l'étude de l'hébéphrénie. Ann. méd. psych., 1899. — Sérieux. *La nouvelle classification du professeur Kraepelin.* Rev. de psych., 1900, No. 4.

an important work based upon personal observations. More recently Sérieux, who had already introduced the ideas of Kraepelin to the French medical world, published several interesting monographs upon this new affection, based upon the observations of the above-named authors as well as upon his own. To-day *dementia præcox* occupies a prominent place in French psychiatry, the framework of which it has profoundly modified, absorbing a large number of the deliria of degenerates (polymorphous deliria, systemaized deliria, etc.).

Dementia præcox has been formed at the expense of hysterical insanity, chronic manias and melancholias, and especially of certain delusional states (*délires des dégénérés*). The last group certainly constitutes the principal support of the new conception. All the delusional states which terminate in mental deterioration belong to dementia præcox by plain right. Thus the province of dementia præcox becomes singularly extensive, and, in fact, of all chronic psychoses dementia præcox is by far the most common. This is one of the reasons for which Kraepelin's conception has been criticized by some alienists, whose contention is that a number of different pathological conditions have been brought together as a single morbid entity. This criticism is not without foundation and it is probable that some day dementia præcox will resolve itself, giving birth to a number of new and more accurately defined morbid entities. For the present, nevertheless, the creation of dementia præcox constitutes a very appreciable progress. "Mental degeneration," which has been in part replaced by it, was the outcome of a

conception which was much more vague, for under that head were included cases of obsession — without actual insanity, — moral insanity, recoverable delusional states, and delusional states which led to dementia. Though very convenient for one who desires above all to label a given case and to write out hastily a certificate of lunacy, the conception of mental degeneration is absolutely fruitless for the clinician who, even aside from any scientific curiosity, wishes to form some sort of idea of the probable outcome of the mental disturbances which he observes.

Thus, in spite of its imperfections, the classification of Kraepelin is still, in the particular case with which we are now concerned, the one from which the best service can be expected. However, I would take the liberty of a comment, not upon the morbid entity itself, but upon the term by which it has been designated. It is certain that the term *dementia præcox* is not a very fortunate one. As a matter of fact the word *dementia* is, at least in France, generally used to designate a state of general and profound intellectual enfeeblement, whereas in dementia præcox the intellectual enfeeblement is often slight and habitually selective in the sense that it affects particularly certain faculties, leaving others intact. But much more open to criticism, it seems to me, is the adjective *præcox*. This may be understood to mean two different things. It may signify either that the mental deterioration occurs early, that is to say, that the disease runs a rapid course, — which is far from being the rule, — or that the disease occurs exclusively at an early age, — which is surely not so; for cases are often met with in which no other

diagnosis is possible, and in which the disease has set in toward the age of forty or fifty years or even later. It is, therefore, to be hoped that the disease will receive another name. Unfortunately it is easier to criticise a word than to replace it by a better one. However, the importance of this disadvantage need not be exaggerated. Accurate clinical distinctions can be made with the aid of poor terms. To-day, who, in speaking of hysteria, thinks of a disease of uterine origin?

As we shall see later on, dementia præcox cannot be defined either by the age at which it occurs or by the rapidity with which it develops. Its specific element lies exclusively in the sum of the psychic changes, affecting the emotions, the will, and association of ideas. Generally these changes are permanent and constitute the mental deterioration which is the most common outcome of the disease. In some cases these changes may recede either temporarily or even permanently.

Dementia præcox appears in many forms that are difficult to classify. In Germany, following Kraepelin, three principal forms are distinguished: hebephrenia, catatonia, and paranoid dementia. Delusional types of hebephrenia resemble paranoid dementia so closely that it is often impossible to determine to which of these groups a given case is to be assigned. It seems more convenient for practical purposes to describe separately the following three forms: simple dementia præcox without delusions; dementia præcox of the catatonic form; and dementia præcox of the delusional form.

We shall study first the physical and mental symptoms that are common to all forms.

SYMPTOMS COMMON TO ALL FORMS.

Psychic symptoms.[1] — All the psychic functions are not equally affected. While orientation and memory are often preserved or but little affected, attention, association of ideas, the emotions, and the reactions are always markedly impaired.

Lucidity and orientation. — These very frequently remain intact, although the appearance of the patients would scarcely lead one to think so. Many patients appear to be ignorant of what occurs about them, yet they will give rational and correct replies to questions concerning the date, their surroundings, and even the important events of the day. We shall return to this question in connection with the study of catatonia.

Memory. — Like the lucidity, the memory is but slightly affected, at least in the majority of cases for a considerable number of years. Old impressions remain well defined, and the knowledge acquired during youth and childhood is often astonishingly well preserved. An old asylum inmate, a typical case of dementia præcox, who had been in the institution for fifteen years, was still able to name without hesitation and in their proper succession all the French rulers from the time of Clovis.

Actual occurrences impress themselves quite durably upon the memory. Many patients are able to relate events that have taken place since their commitment, and can often even name the physicians and attendants

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[1] Masselon. *Psychologie des déments précoces.* Thèse de Paris, 1902.

that have followed each other on the service during several years.

However, when the affection is of long standing it is rare for the memory not to have become impaired to some extent. Anterograde amnesia is the first to appear; the power of fixation becomes diminished. Retrograde amnesia appears later and is usually less marked. Little by little old impressions grow fainter and may even become entirely effaced.

Attention. — This faculty is always weakened. Any labor requiring some degree of concentration becomes impossible.

Association of ideas. — These are sluggish and often occur without any apparent connection,[1] giving rise to speech which may reach the extreme limits of *incoherence.* I have given a very typical example of such speech. These incoherent phrases are uttered quietly and without the volubility which characterizes flight of ideas of the maniac. On superficial examination this phenomenon may create the impression of a profound state of dementia or mental confusion, which in reality does not exist. The patient whose incoherent speech we have quoted as a typical specimen is perfectly oriented and possesses good memory.

The *affectivity* and the *reactions* are greatly impaired from the beginning. *Indifference* constitutes an early and very prominent symptom of dementia præcox. The patient takes no interest in anything, expresses no desires, makes no complaints. Often even hunger determines no reaction. If the patient is accidentally forgotten at meal-time he evinces no surprise and

[1] See page 78.

makes no protest. As in all conditions of dementia, this disorder of affectivity is not a conscious one.

Occasionally, especially at the onset of the illness, this habitual state of indifference is interrupted by explosions of anxiety or of anger, for which there is often no apparent cause.

A priori the moral indifference of dementia præcox would be expected to lead to a reduction of the voluntary and normal reactions. Actual observations upon patients prove that this is really the case.

On the other hand, the automatic reactions are often exaggerated. They manifest themselves under all the forms studied in the first part of this work, General Psychiatry: pathological suggestibility, negativism, and impulsiveness (stereotypy of movements and of attitudes, verbigeration, grimaces, unprovoked laughter, etc.).

Mental deterioration. — When, as is most often the case, the disorder of attention, the sluggish formation of associations of ideas, and the impairment of affectivity and of the will, or in other words, when all the symptoms which we have described above have become definitely established we have *mental deterioration.*

The degree of deterioration is variable. In some cases it apparently affects all the psychic functions to so pronounced a degree that all mental activity seems to have disappeared, and, from this point of view, the patient cannot be distinguished from an idiot or from an advanced general paretic. Such cases are exceptional, and often enough the dementia is much less complete than it appears to be from a superficial examination, as is shown by the following case:

Theresa C., formerly a school teacher, at present (1905) a patient at the Clermont Asylum, age thirty-four years. The disease came on at the age of twenty-five. For several years this patient has lived in a state of apparently complete unconsciousness, incapable of carrying out the simplest commands or of answering the most elementary questions. The facial expression is silly. The patient spends most of her time sitting in a chair or wandering about the court-yard, talking incoherently, her utterances showing marked stereotypy. The word " mystery " keeps recurring in the manner of a *Leitmotiv:* " To digest the nature of mystery, Claude of mystery, Matthew of mystery, Joseph of mystery. It is a conflagration, it is a petticoat, it is an oblation, resurrection, when will you wake up, like the brutes. Mystery, of mystery, forty-eight of mystery," etc. Totally indifferent to everything, she manifests not the slightest emotion when spoken to about her family or when offered her release. She is filthy in her habits. And yet, when a pen is put in her hand she will write disconnected words or fragments of sentences *without a single orthographical error.* No example could illustrate more clearly the dissociation which characterizes dementia præcox in which total ruin of some faculties is compatible with perfect conservation of knowledge acquired previously.

Somatic disorders.[1] — The number of known somatic disorders of this disease is constantly increasing as a result of the special attention recently bestowed upon the subject by alienists. Unfortunately none of these can be considered as either constant or pathognomonic. They are present in all the three forms of the disease, though they are perhaps most marked in the catatonic form.

Motility. — The disorders of motility consist in hemiplegias and monoplegias that are slight and of short duration; convulsive hysteriform or epileptiform seizures, to which are also to be added apoplectiform attacks so closely simulating true apoplexy as to be

[1] Sérieux et Masselon. *Les troubles physiques chez les déments précoces.* Soc. méd. psych., June, 1902.

liable to be mistaken for it. The contractures often observed are usually the consequence of negativism.

Sensibility. — One must be guarded against attributing the absence of reaction to pricking, which results from negativism, to anæthesia. True disorders of sensibility are, however, far from being exceptional. They are often unilateral, as in hysteria. Other hysteriform symptoms of the same order are also encountered: tender areas, clavus, globus hystericus, etc.

Tendon reflexes. — Sometimes diminished or abolished, much more frequently exaggerated.

Pupils. — Their disorders are frequent but variable: inequality, mydriasis, sluggish reaction, the phenomenon of Piltz, i.e., contraction of the pupils on forcible closure of the eyelids. This phenomenon is analogous to the following one, which was observed at the same time, independently, by Piltz and by Westphal: "If the patient attempts to shut his eyes while his effort is opposed by the examiner who holds the lids apart forcibly with the fingers, a contraction of the pupils takes place while the eyeball is rolled upward and outward." [1]

The pupillary disorders often undergo fluctuations corresponding to those of the mental condition. I recall a case of catatonia in which the intensity of the stupor determined, as it were, the degree of mydriasis. As the stupor disappeared the pupils reassumed their normal size.

Circulatory apparatus. — Vasomotor disorders causing œdema, cyanosis of the extremities, and dermatographia are frequent. Sometimes the pulse is slowed.

The *temperature* may be subnormal (Kraepelin).[2]

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[1] Piltz. *Revue neurologique*, 1900, No. 13.

[2] *Lehrbuch der Psychiatrie*, Vol. II, p. 190.

Digestive tract. — Indigestion, anorexia, and constipation are often found, especially during the acute period. The development of mental enfeeblement is occasionally marked by boulimia.

Urinary apparatus. — Sometimes there is polyuria, at other times, on the contrary, oliguria. The changes in the composition of the urine are but little known. A diminution of urea and an increase of chlorides have been found.[1]

Secretions. — We know nothing of the disorders of the secretions excepting that of saliva, which in some cases is greatly increased.

General nutrition. — Its changes, though undoubtedly of great importance, are as yet but little known. The weight is reduced in the acute stages, but rises again during the quiet periods. Some precocious dements present a remarkable degree of corpulence.

The physical phenomena which we have here mentioned are difficult to account for. They, however, enable us to draw the very interesting conclusion that the morbid process of unknown nature, and psychically manifested as dementia præcox, affects not only the brain but the entire organism.

A. SIMPLE DEMENTIA PRÆCOX.

In this form the symptoms are reduced to phenomena of mental deterioration together with more or less pronounced changes in disposition.

The *onset* is almost always insidious, and it is usually impossible to determine even approximately its date.

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[1] Dide et Chénais. *Recherches urologiques et hématologiques dans la démence précoce.* Ann. méd. psych., 1902.

A subject previously affectionate, active, intelligent, even brilliant, becomes indifferent, indolent, and distracted. He is weary of everything, of play as well as of work. He ceases to acquire new ideas, or to coordinate those which he has acquired previously, so that his general stock of ideas becomes more and more limited.

Nervous symptoms (headache, insomnia, hysteriform disturbances) or constitutional symptoms (anorexia, loss of flesh) are frequent.

In the mild forms the disease is often unrecognized. The symptoms of intellectual enfeeblement pass for "negligence" or "lack of ambition." Such cases occur much more frequently than is commonly believed.

The following lines from a letter addressed by a principal of a school to the parents of one of his pupils are very significant from this point of view.

"As you can see, the marks of M. L. are no better than those for the preceding term, far from it. This pupil pays no attention to his duties, which three-fourths of the time are left unfinished; he no longer takes the trouble of learning his lessons. In the class room and at his studies he spends most of his time dreaming. It is evident that he cares nothing for his work. His professors no longer recognize in him the former studious pupil. It seems that even the approaching examinations do not affect his indifference. When it is pointed out to him that he is likely to fail, he promises vaguely to be more diligent, but one can see that he has no firm determination. The comments and suggestions in the letters of his parents no longer have any effect on him. . . Formerly so jolly and so full of good humor, he has become quite unsociable. He does not seem to be pleased except when alone. When, by way of exception, he joins his comrades in conversation or in play, he soon leaves them, often after quarreling with them over some absurd trifle. . . Lately he has been complaining of insomnia and headache. We have had the physician see him, but he has found nothing serious and has merely prescribed rest."

M. L. is to-day a true dement. He lives with his parents and is at best able to do only simple manual work. For a long time he showed some irritability. Now he has become totally indifferent.

B. CATATONIA.

Onset. — Prodromata are almost constant; they possess no specific features: change of disposition, inaptitude for work, insomnia.

Often the symptoms of *melancholia* open the series of grave phenomena. In themselves they present no pathognomonic features, but consist merely in a state of depression or psychic pain which may be associated with delusions and hallucinations.

Soon the catatonic phenomena proper appear; they may occur also at the onset without being preceded by the period of depression mentioned above. They depend upon a disorder of affectivity, *indifference*, and a disorder of the reactions, *disappearance of the normal will* associated with *exaggeration of the mental automatism*. Clinically they appear in two principal forms: *catatonic excitement* and *catatonic stupor*.

Catatonic excitement. — Sometimes, especially at the beginning, it simulates an attack of confusional insanity or of mania; disordered movements, incoherent speech, impulsive reactions. Soon, however, the nature of the symptoms becomes more definite and the peculiar characteristics of catatonic excitement appear. Its principal features are four in number:

(1) Catatonic excitement is free from any emotion;

(2) It is not influenced by external impressions;

(3) It is not, at least in the majority of cases, governed by definite delusions;

(4) It is monotonous (stereotyped movements, verbigeration).

In other words, the reactions in catatonic excitement attain the extreme limits of automatism.

The spells of excitement occur without cause, in an impulsive and unexpected manner. The patient performs most singular and at times most dangerous acts without being able to furnish any explanation for his conduct even when the attack has passed and has left in his mind a clear recollection of all that he did. A catatonic, perfectly composed an instant before, leaves his bed, seizes a glass and throws it violently at the head of his neighbor. Another breaks to pieces a thermometer imprudently left in his possession. A third calls loudly for a drink of water while holding in his hand a glass filled to the brim. Some display for weeks or months suicidal tendencies without there being any depressive ideas to account for them.

The movements, attitudes, and conversation present stereotypy and verbigeration. Often the patients assume an affected or dramatic air. Their gestures, manners, and fantastic dress frequently survive the period of excitement and persist through the quiet periods and the terminal dementia. Some patients will hop on one foot for months instead of walking; others will invariably respond to all questions by the same phrase; still others will not eat their food without first mixing it up into a disgusting mess; others, again, will walk back and forth on a short path all day long, taking alternately a certain number of steps forward

and the same number backward. Such examples could be multiplied indefinitely. Most frequently these peculiarities in the conduct of the patient are purely automatic and remain inexplicable. They are usually not dependent upon delusions. Their origin lies in a perversion of the reactions, and not in any disorder of ideation or of perception. Although delusions and hallucinations are not invariably absent in catatonia, as is insisted upon by Tschisch, they are, however, too rare to explain the anomalies of the reactions, which are constant.

Catatonic stupor. — This may follow a period of depression or one of catatonic excitement, or it may be primary, constituting the onset of the disease.

In its true sense the term " stupor " implies the existence of a profound disorder of consciousness. In this connection, however, the word is used in a different sense. As a matter of fact lucidity is but slightly if at all impaired in the catatonic. Impressions of the external world are perceived almost normally. Very frequently the patient, though seemingly unconscious of his surroundings, relates, after the stuporous attack has passed, with surprising precision the facts which would seem to have totally escaped his observation.

In spite of appearances catatonic stupor[1] is therefore not the result of an intellectual disorder proper, but, like catatonic excitement, of a disorder of the will.

Automatism of the reactions is met with in three

[1] Tschisch. *Die Katatonie.* A Russian work abstracted in *Allgem. Zeitschr. für Psychiatrie,* 1900.

forms, which we have already mentioned: negativism, stereotypy, and pathological suggestibility.

Negativism is manifested in simple acts, such as movements of a limb, as well as in complex acts, such as eating, dressing, etc. The patient fails to react to stimuli either from the external world or from his own organism.[1] An order given is not executed. Pricking, even when deep, produces no movement, not because it is not felt, but because voluntary reaction is annihilated. Hunger produces no reaction. The urine accumulates in the bladder, saliva in the mouth, fæcal matter in the rectum without there being any true paralysis.

Two particularly interesting forms of negativism are mutism and refusal of food. Either symptom may persist for a long time without interruption and each may present very diverse characteristics.

Stereotypy is seen in the attitudes and in the physiognomy.

Certain patients assume very singular positions: extreme flexion of the limbs, a squatting position, the elbows upon the knees, the head drawn back, etc.

The physiognomy of the patient is often distorted by grimaces. The lips are contorted in a kind of grin, or protruded, as though the patient were making faces. The eyes may be closed tightly. These phenomena may persist for months or years. Almost always, at least in the beginning, they disappear during sleep.

Pathological suggestibility often alternates with negativism. Certain catatonics retain any attitude in which

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[1] Stoddart. *Anesthesia in the Insane.* The Journal of Mental Science, Oct., 1899.

they may be placed, even the most uncomfortable (cataleptoid attitudes). Incapable of making their toilet they submissively allow themselves to be washed, combed, and dressed. Many become filthy and soil and wet themselves unless taken to the toilet at regular intervals. Sometimes a single impulse suffices to start the subject and make him accomplish in a sort of mechanical manner some habitual act or even series of acts: once seated at the table with his plate filled in front of him, he may eat like any normal person.

Echolalia and echopraxia, — phenomena which are also dependent upon suggestibility, — are not infrequent.

Like catatonic excitement, catatonic stupor is essentially free from emotion.

The following case is a good illustration of catatonic excitement and of catatonic stupor.

Adrienne P., patient at the St. Anne Asylum, corset maker, twenty-five years old at the onset of her illness. — *Heredity:* paternal grandfather died at the age of sixty years of senile dementia; father is an alcoholic, has been committed twice; paternal aunt committed suicide. — The patient began to walk and speak very late in childhood; menstruation appeared at the age of seventeen, has been regular but painful. She has shown no abnormality in intelligence or in disposition. — At nineteen, pleurisy. At twenty-four, during a sojourn at London, a severe attack of scarlet fever with pronounced albuminuria; patient was sick three and a half months; convalescence lasted two months. Since then (fall of 1897), the relatives noticed a change in the mental condition of the patient from the letters which she wrote home. On her return to France Adrienne was gloomy, irritable, apathetic. She refused to work and often even to rise in the morning. Complete loss of appetite, headache. Much worried about her health, she consulted several physicians but with no appreciable result.

On October 20, 1898, acute symptoms set in in the form of disorders of perception. The people are " droll," the dishes served in the restaurant are " droll," life is " droll " and " absurd." At the

same time hallucinations of vision appeared: the patient saw men following her, also ghosts and stars. On October 26 she started out to go to her sister who lived in the suburbs of Paris; failing to find her she walked at random and wandered around the country for two days and two nights. She was found walking along a railroad track, her hair undone, her clothes in disorder; they arrested her and took her to the Corbeil Hospital where she remained eight days in complete mutism. On her return to her mother her mutism disappeared, but she gave no explanation of what she did, telling simply that she had seen things which frightened her: terrible men and animals. For some time she remained relatively quiet, but depressed and intractable. She refused to see a physician, though her mother begged her to do so. On the night of November 24 she suddenly became greatly excited, cried, gesticulated, and uttered incoherent remarks some of which were suggestive of hallucinations: she spoke of men following her and of saints whom she saw. She tried to throw herself out of the window.

On being brought to the clinic on November 28 she was in almost complete mutism. To all questions put to her she responded by outlandish gestures and grimaces bearing no reference to the questions. On being asked to write she tore the piece of paper which was offered her.

On December 1, at the occasion of a visit from her mother, Adrienne came out of her mutism but her remarks were incoherent. "She cannot see, she can see very clearly. . . . It is Alfred, it is Martin speaking to her. . . . They are not saying anything." It was very difficult to tell whether she really had hallucinations.

Towards the evening she became totally estranged from the external world. She no longer responded to any question.

Spells of excitement and of stupor have since then followed each other without any regularity, presenting respectively the characteristic features of catatonic excitement and of catatonic stupor.

The excitement is purely automatic. The same movements are constantly repeated monotonously and aimlessly. For hours at a time the patient goes through peculiar and incomprehensible gestures, striking the floor alternately with the right foot and with the left foot, and extending her arms and clenching her fists in a threatening manner but never striking any one. She stands up in her bed in a dramatic attitude, draped with the blanket, and frozen, so to speak, in that position, uncomfortable as it is. In her attacks of excitement she displays considerable physical strength. On May 25, 1900, she made a steady, persistent attempt

to leave her bed and get out of the dormitory; her eyes were shut, her expression apathetic, and she uttered not a word or a cry. Several nurses held her back with difficulty.

Her utterances show either incoherence or verbigeration. On January 15, 1900, she stood up in her bed and sang for several hours: " The baker's wife has money," etc. On May 23, of the same year, she kept repeating during several hours without interruption " Hail Mary," etc.

She shows marked negativism. When spoken to she will give no response, showing absolute mutism; she resists systematically all attempts at passive movement: to open her mouth, to flex an extended limb, or *vice versa*. The command to open her eyes results immediately in a spasm of the orbicularis muscle. Refusal of food is at times complete, and then the patient has to be tube-fed; at other times it is partial, the patient taking only liquid food which is poured into her mouth by means of a feeding cup and which she then swallows readily. On November 4, without any apparent reason, she ate spontaneously a piece of bread which she took from the table. For two days she thus took bread, cheese, and chocolate, but persistently refused everything else. Later she relapsed into her former state and now takes none but liquid food which has to be poured into her mouth. Her sensibility appears to be normal, but all reaction is annihilated. Painful pricking with a pin causes slight trembling, but no cry, nor any movement of defense.

In the stuporous phases the patient lies in her bed, completely immobile. Generally this immobility is dominated by negativism which is manifested by the same traits as those observed in her excited phases. On several occasions, however, she has shown very marked suggestibility. Thus once she submitted readily, though passively, to being dressed and taken to the office of the ward physician. When standing she remains motionless, yet she will walk mechanically as soon as she is pushed. When invited to sit down, the patient slightly flexes her legs and makes a movement as though starting to sit down, showing that the command is understood; yet she will go no further, but remains standing. When taken by the shoulder and slightly pushed she sits down without trouble. Her limbs are flaccid and present no resistance to any passive movement. Negativism persists only in the muscles of the mouth and eye-lids, which remain closed and resist being opened. Cataleptoid attitudes are rare. One was, however, observed on October 30, 1900. The right arm was held for ten minutes in complete extension. On the following day this symptom disappeared.

The patient soils and wets her bed frequently, though not constantly, both during the periods of excitement and during those of stupor.

The general nutrition is profoundly affected; the skin is discolored, the hair is falling out, and there is considerable emaciation: from December, 1898, until May, 1899, the patient's weight fell from 94 pounds to 77 pounds.

In March, 1901, the patient, considered as being completely incurable, was transferred to another asylum.

Save in the rare cases in which the disease terminates in recovery, the catatonic comes out of his spell of excitement or of stupor with more or less intellectual enfeeblement.

Often some of the catatonic phenomena persist, thus disclosing the origin of the dementia; stereotyped attitudes, mannerisms, verbigeration, etc.

The following case illustrates this point.

Suzanne N., patient at the Clermont Asylum, at present (1904) fifty-eight years old. The disease came on in 1894, when the patient was forty-eight years old. The clinical record in this case shows an affection developing by alternating attacks of excitement and depression, with occasional mutism and refusal of food. For the past several years the patient has been living apparently estranged from all that surrounds her. She never speaks to the physician, to the nurses, or to any of the other patients. She answers no questions, carries out no command. Negativism is very marked. Any attempt to open her mouth, shake hands with her, etc., meets with absolute resistance. The patient's gestures, actions, and utterances present all the features of stereotypy. For hours she keeps repeating certain movements, which would surely very soon tire out a normal person, and which consist in shaking both hands up and down a good deal like little children do in imitation of marionettes. When free she starts immediately for the nearest door which she tries to open, and, when she succeeds in doing so, continues to walk straight ahead without any aim. Yet if she is tied in her chair, even though it be only with nothing stronger than a woolen thread, she will not budge. When the door of the ward is shut she is completely mute, — but the

instant the door is opened, she begins mechanically, like a spring that is suddenly released, to repeat in a monotone: "Eucharist, penance, extreme unction," or "Jesus Christ, Holy Sacrament," or she recites from beginning to end: "I believe in God," etc. This is kept up as long as the door remains open, but ceases as soon as it is shut.

She is very untidy in her habits, spilling her food upon her dress and often urinating in her bed or in her clothes.

In spite of the complete indifference which she shows, the patient is perfectly lucid. Nothing that occurs about her escapes her observation. During the visits of her relatives her mutism disappears as if by magic. She converses readily and tells all the gossip of the institution: they had a feast on mid-Lent, Mrs. X. got a new dress, etc.

The disease often develops in repeated acute attacks, each, whatever be its form, leaving behind it a more advanced degree of mental deterioration. Occasionally attacks of excitement and stupor alternate with each other with a certain regularity, simulating circular insanity.

C. DEMENTIA PRÆCOX OF THE DELUSIONAL FORM.

The *prodromata* consist, as in most psychoses, in change of disposition, insomnia, and impairment of general health.

Schematically we may distinguish in the delusional form of dementia præcox two extreme types which are connected by a great many intermediate types: (1) The incoherent type; (2) The systematized type.

(1) **Dementia præcox with incoherent delusions.** — As this name indicates, the delusions and the numerous hallucinations which usually accompany them follow each other without any connection or governing idea, and are accepted by the patient as they appear, without

any attempt on his part to find an explanation or an interpretation for them.

The general character of the delusions may be of three varieties:

(*a*) *Depressive variety:* Melancholy delusions associated with more or less marked depression and hallucinations of a painful nature. Often ideas of persecution are added to the melancholy ideas, and occasionally they even predominate. It is not rare to encounter, especially at the beginning of the disease, attacks of very pronounced anxiety, suicidal ideas and attempts, or violent tendencies.

(*b*) *Maniacal variety:* Excitement, irritability, morbid euphoria, ideas of grandeur occasionally associated with ideas of persecution, numerous hallucinations, erotic tendencies, and sometimes a certain degree of confusion.

(*c*) *Mixed variety:* The two preceding varieties are seldom met with in a state of purity. They are almost always combined with each other in one of two different ways:

(1) States of depression and those of excitement alternate without any order, and mutually replace each other every instant; in other words, the delusional state is *polymorphous.*

(2) The disease develops in three stages:

I. Depression with melancholy delusions;

II. Excitement with expansive delusions;

III. Dementia.

Sometimes, as in catatonia, the disease assumes a circular type. There are recurrent attacks, each consisting of a phase of depression and one of excitement

and leaving behind each time a more pronounced state of dementia.

(2) **Dementia præcox with systematized delusions.** — This is the type to which the term *paranoid dementia* is most applicable. The systematization of the delusions is not equally accurate in all cases. Sometimes it is quite perfect, so that the disease resembles chronic delusional insanity. In other cases the systematization is, on the contrary, so imperfect that one hesitates to classify the case among the precocious dements with systematized delusions. We have already seen that there exists between the two delusional forms of dementia præcox an infinity of intermediate forms.

Lucidity is preserved except during the transitory acute paroxysms, which are of frequent occurrence.

Hallucinations are frequent and affect all the senses.

Dementia supervenes after a variable period of time, which is in some cases very long. As it progresses the number of delusions becomes more and more limited, the hallucinations diminish in frequency and in intensity, and the reactions become weaker and weaker. Often the system of delusions is reduced to one or two morbid ideas, crystallized, so to speak, and constituting a "*paranoic residue*" which remains as the last vestige of the delusional state originally characterizing the affection. Neologisms are frequent in the period of dementia.

The systematized type of delusional dementia præcox is met with in three principal varieties:

(*a*) Persecutory variety;

(*b*) Melancholic variety;

(*c*) Megalomaniacal variety.

(*a*) *Persecutory variety.* — The delusions may either appear *rapidly*, after a brief period of prodromata, or, on the contrary, they may develop *slowly*, accompanied at first by false interpretations and only later by hallucinations, as in chronic delusional insanity, which we shall discuss farther on.

The *psycho-sensory disorders*, hallucinations and illusions, are constant, of an unpleasant nature, and may affect any of the senses. Hallucinations of the genital sense are frequent.

The *reactions* consist in defensive acts; these reactions become gradually weaker as the dementia becomes established.

The dementia is often announced by disaggregation of the personality, with such symptoms as autochthonous ideas, motor hallucinations, stealing and echo of the thoughts, etc. The time of its appearance is quite variable. Multiplicity of hallucinations usually indicates a grave prognosis and points to a rapid evolution towards intellectual enfeeblement.

It is not rare to note some degree of excitement appearing in paroxysmal attacks.

(*b*) *Melancholic variety.* — At the onset the melancholy ideas present no peculiarity. There are ideas of culpability, humility, ruin, etc., as in the melancholia of involution or in manic depressive insanity. Later they group themselves so as to form a *delusional system* which persists until the appearance of dementia.

All varieties of psycho-sensory disturbances are met with. The most important are motor hallucinations, which are of quite frequent occurrence and indicate already advanced psychic disaggregation.

Mystic ideas, ideas of possession, hypochondriacal ideas, and ideas of negation are frequent. Occasionally the symptoms present themselves in the form of the *syndrome of Cotard.*

Attacks of anxiety, common in the beginning, as they are in all psychoses in which the depressed state predominates, become less and less frequent as the peculiar indifference of dementia præcox establishes itself, and the most frightful delusions often exist without any emotional reaction.

As in the preceding form, the intellectual enfeeblement often takes a long time to develop.

(*c*) *Megalomaniacal variety.* — The ideas of grandeur may either be primary or they may follow a very brief period of ideas of persecution. They assume the most varied forms. The patients claim to be owners of immense fortunes, to be of illustrious descent, to possess remarkable talents, etc.

The hallucinations, which are less numerous and less constant in this than in the two preceding varieties, are always of an agreeable nature. The development of dementia is usually rapid.

(*d*) *Mixed varieties.* — The three preceding varieties may combine with each other so as to form four principal mixed types:

Type I: Period of melancholia; period of persecutory ideas; period of dementia.

Type II: Period of melancholia; period of persecutory ideas; period of grandiose ideas; period of dementia.

Type III: Period of melancholia; period of grandiose ideas; period of dementia.

Type IV: Period of persecutory ideas; period of grandiose ideas; period of dementia.

The different periods almost always overlap; melancholy ideas and ideas of persecution, for instance, often coexist; and the same is true of ideas of grandeur and ideas of persecution.

I regret that the space at my disposal is so limited as to preclude my citing cases illustrative of all the different varieties of paranoid dementia. I shall have to limit myself to the citation of one case which seems to have reached its complete development and which will give the reader a good idea of paranoid dementia with imperfectly systematized delusions and with mental deterioration.

Louise S., fifty years of age, occupation day worker. The disease came on in 1882. The record of examination at that time shows a state of depression with ideas of persecution and numerous hallucinations. Toward 1886 systematized delusions of persecution had developed, also combined with hallucinations. From 1890 to 1892 the patient had spells of extreme excitement, caused, it seems, by auditory hallucinations; in her excited spells she made many violent assaults on those about her. Since 1894 the delusions lost their systematization.

At present the patient presents a rather incoherent delusional state, consisting of ideas of persecution, ideas of grandeur, hallucinations of hearing and of vision, and characterized by formation of numerous neologisms.

The patient's persecutors are two in number: a man and a woman. They sleep in the asylum at night. But they go out every morning and the patient sees them wandering about in the vicinity of the asylum (visual hallucinations). She sees them "in a by-place, like the trees in the distance." All that she knows about their dress is that the woman wears a black scarf with tricolored stripes at the ends: green and two shades of red. Their name is "Tantan." As they go by they shout: "There are the Tantans! There are the Tantans!" Their remarks contain many neologisms. They complain of being "knai-

fied" (tied together) by a cord which they call "credamina". When they see the peasants at work they say: "We shall 'charlott' (stroll around), that will be better." They pour out imprecations and threats against the "asilette" (sanitarium): "Nasty asilette! . . . We shall 'founder' the asilette! . . . We shall open fire upon the asilette!" They try to poison the food of the patients, and this spoils the taste of the food and causes symptoms of poisoning. They call the patient "cracked" and threaten to kill her. But she is not afraid of them, as she has authority over them, provided the physicians will give her the power. On the thirteenth of last February she made them pay 502 francs which they owed her for washing. They are very deeply in debt; they owe especially a great deal of money to the town of Clermont and they are condemned to wander until they have paid off all their debts.

The patient's ideas of grandeur are much more incoherent than those of persecution. The patient has two existences. The duration of the first — which preceded her birth — is reckoned in centuries. The second, which is her "minority," is reckoned as forty-nine years (her real age). She has assumed a fictitious name: Mrs. Schlem, née Madeleine Vean Marcille. Each human being coming from the hands of God should, according to her, bear a "number of creation." Hers is 2511. Born in Alsace (which is correct), she was brought up in the land of "Frantz," a country like France, only "more ancient and more serious," governed at once "by a republic, a king, and an emperor." She spent part of her life in the "Helvandese" republic. She made her living there by manufacturing desserts. Since then she became the successor of Her Majesty "Angerguma," the queen of the "Sgoths," a people living between Switzerland *S* and Switzerland *C*. She has 59 million francs which she earned by working as a nurse for children and later as a portress. Her wages were 3 francs per day. She was nurse for children for four hundred and seven years. The rest of the time — she cannot tell exactly the number of years — she has been working as portress, which is still her occupation. All her titles and all her rights are recorded in the "documents of conviction," a book which she has. Information concerning this book is to be obtained from the one in charge of the scullery.

These delusions, though active, at present produce no reaction on the part of the patient and do not affect her lucidity. The patient is quiet and is a useful and intelligent worker. She works in the dining room of her ward, sees that the table cloth is put on

at the proper time and that the slices of bread are regularly distributed. After meals she helps to wash the dishes and watches over the work of her helpers. Between meals she works in the nurses' kitchen. On Sundays she writes letters for other patients who are unable to write. The letters which she composes are perfectly sensible, and the spelling is tolerably good, which indicates the conservation of a certain amount of knowledge acquired previously. But her activity is always in the same direction in which it has been for a number of years. The supervising nurse reports that she cannot adapt herself to new work.

Her affections have completely disappeared. Her children, whom she persists in calling her "babies," paid her a visit several years ago. She recognized them, but received them with absolute indifference. She shows no attachment to any one about her. Whenever any nurse or patient leaves the institution, she simply says: "Another will soon come in her place."

DIAGNOSIS, PROGNOSIS, ETIOLOGY, AND TREATMENT OF DEMENTIA PRÆCOX IN GENERAL.

Diagnosis. — This is based upon:

(*a*) The early appearance of disorders of affectivity and of the reactions;

(*b*) The delayed appearance of intellectual disorders proper and their less marked intensity;

(*c*) The contrast existing in most cases between the delusions and the emotional tone;

(*d*) The purely automatic character of the excitement and of most of the reactions.

It is at the beginning that the greatest difficulty in diagnosis is encountered.

Mental confusion is to be distinguished by the much more pronounced disorientation, the much more *real* disorder, so to speak, of consciousness, and by the symptoms of profound denutrition, sometimes of true cachexia, which are a constant manifestation of the disease.

General paresis is distinguished by the intellectual enfeeblement *en masse*, by its characteristic physical signs, and by its special etiology.

Delirium tremens, which may be simulated by the delirious outbreaks marking the onset of dementia præcox, is recognized by the pathognomonic character of the hallucinations, by the very pronounced allopsychic disorientation contrasting with the intact autopsychic orientation, and by the stigmata of alcoholism.

Alcoholic hallucinosis is often very difficult to distinguish from the delusional form of dementia præcox. Special attention must be paid to the etiology of the case and to the evolution of the disease, which is more favorable in alcoholic hallucinosis. One should, however, be very guarded in rendering a diagnosis as well as a prognosis. In practice it is not rare to meet with chronic alcoholics who present, after an attack of alcoholic hallucinosis or even of delirium tremens, the symptoms of dementia præcox which subsequently run the classical course and to which the alcoholism has served merely as a portal of entry.

Prognosis. — This is always grave as the usual outcome is dementia.

The mental deterioration is sometimes so slight, it is true, that it appears only as a scarcely perceptible sluggishness of association of ideas, a certain degree of moral indifference, and a tendency to intellectual fatigue.

A certain number of patients even form an exception to the general rule and recover completely. Such cases are rare and are to be accepted only with extreme circumspection. Many of the apparently complete

recoveries are but relative, and many recoveries considered permanent are but temporary; that is to say, they are mere *remissions*.

Indeed, remissions are frequent in dementia præcox. Their duration varies within very wide limits, from a few hours to several years. It is not exceptional for a precocious dement to come out of his first attack apparently unscathed, resume his normal life for five, six, or more years, suffer a recurrence, and end with dementia.

Dementia præcox is not in itself a fatal disease. It may terminate fatally from the complications by which it is sometimes accompanied. The most formidable of these is pulmonary tuberculosis, which is apt to attack patients in a state of depression or in catatonic stupor.

[Such is the general prognosis of dementia præcox. But since the possibility of recovery or at least of long remissions exists in some cases, the practical alienist is in every case, considered individually, confronted with the problem of rendering not a general but a special prognosis.

It is difficult, not to say impossible, to predict the course and outcome of a given case. Some features of the disease have, however, been found empirically to be of special prognostic significance, and may therefore aid the physician in forming an opinion.]

The first point, one that should never be lost sight of, is that only those cases can be properly regarded as absolutely incurable in which there is actual mental deterioration. In this connection the most certain and most constant sign of mental deterioration is *indifference*, when it exists independently of any marked disorder of consciousness, hallucinations, excitement, or stupor,

in other words, when it exists as a basic disorder. A host of symptoms, descriptions of which have already been given and which need not here again be entered upon (weakening of attention, inaction, etc.), are seen in more or less close association with indifference; it must, however, be insisted on that their significance is subordinate to that of indifference.

Aside from these states of actual intellectual deficit the prognosis should always be guarded. Nevertheless valuable indications may be gained from a study of the combination of symptoms before the development of mental deterioration; for the various forms in which the disease appears and, in the same form, the predominance of one or another symptom, afford very different indications.

There is but little to be said concerning the simple form: consisting essentially of mental deterioration, it may be regarded as incurable from the beginning. The question may arise whether the deterioration will progress or will remain stationary. Unfortunately there is no sign which might aid in forming a judgment on this point.

The catatonic form presents the greatest chance of cure. Meyer has seen 20–25 per cent of cases terminate in improvement sufficient to enable the subjects to take their place again in life in society.

Kraepelin himself has observed in 20 per cent of his cases remissions so complete and so lasting as to resemble cures. I do not believe these figures are exaggerated, but may be rather an underestimation of the truth. It seems clear, therefore, that recovery from catatonia is a possible thing.

Catatonic symptoms are not all of the same gravity. In a general way, states of excitement are of lesser gravity than states of stupor, the latter not being, however, always incurable. Negativism, morbid suggestibility, or delusions do not imply a particularly unfavorable prognosis and are capable of retrogression and complete disappearance. On the other hand stereotypy, whether of speech, movements, or attitudes, very marked incoherence, sudden violent and unexplained impulses, not having their origin in a delusion or a hallucination, have an unfavorable significance and generally constitute signs of chronicity, without, however, enabling us to predict the degree of mental deterioration which the disease may lead to. These symptoms would justify us in saying fairly definitely that the patient will not get well, but not that the disease will be arrested in its progress, or that it will advance; this point should always be reserved.

The delusional forms are not all of the same gravity, although on the whole the prognosis of delusional dementia præcox is more grave than that of catatonia. Systematization of the delusions is almost always a sign of chronicity. I say chronicity, but not tendency toward either rapid or profound mental deterioration; for there are types of paranoid dementia with active and well systematized delusions in which it would be very difficult to detect any trace of mental deterioration. Such cases approach those which are to-day still described under the name of chronic delusional insanity without dementia and which have been insisted on by Falret and his pupils, when they have maintained, contrary to Magnan, that the period of dementia may be

wanting in chronic delusional insanity. Hence, the indication of systematized delusions is: chronicity very probable, but not necessarily dementia.

This probability becomes even greater when the delusional system becomes impoverished, begins to show features of incoherence and absurdity, and especially when the delusions cease to be accompanied by adequate affective state and reactions. The latter principle is but a corollary of the principle enunciated above, namely, that indifference without an obvious basis is a symptom of incurability.

As signs of unfavorable prognosis in paranoid dementia should be mentioned, further, multiplicity of hallucinations (when occurring independently of mental confusion), in particular psychomotor hallucinations and those of general sensibility, also transformation of the personality.

These are, briefly sketched, the data which enable us in a certain measure to foresee the course in a given case of dementia præcox. One must not be misled into taking the value of these criteria to be any greater than that of provisional landmarks; in the present state of our knowledge of psychiatry skill in prognosis is dependent chiefly upon appreciation of fine shades, which comes only with long experience in mental diseases.

[As being of prognostic significance may be mentioned further very decided "shut-in" make-up (see p. 255) and insidious onset, both points being of grave import, while abrupt onset in a subject of normal mental make-up affords greater hope of improvement or recovery.]

Etiology. — Statistics show that dementia præcox is a disease chiefly of young life. According to Kraepelin,

in sixty per cent of the cases it begins before the twenty-fifth year. It is rare after the age of thirty. It seems, however, difficult to state at what age it entirely ceases to occur. Certain psychoses identical with it in symptoms and evolution are met with at advanced ages. But such irregularities are not limited to psychiatry. Miliary tuberculosis is an affection chiefly of childhood and youth; it is, however, also met with in elderly people. Is it surprising, therefore, that a psychosis presenting all the features of dementia præcox should be found to occur by way of exception in middle-aged or even in old individuals?

Heredity, though less frequent than in some other psychoses, exists nevertheless in more than half of the cases.

Severe infections, overwork, grief, and traumatisms are often found in the history of dementia præcox, but it seems impossible to determine the part played by these different factors. Von Muralt has observed several cases of catatonia following traumatism. I saw a case of catatonia in which the disorder was preceded by a very severe attack of scarlet fever; also a case of paranoid dementia in which the mental trouble was preceded by typhoid fever.

The *intimate nature* of the disease has so far escaped us, and we must be content for the present with hypotheses.

According to some authors dementia præcox results from an arrest of intellectual development: the brain ceases to acquire new impressions, being exhausted by previous efforts which were too great for the energy which it originally possessed. This explanation, as-

suming it to be correct, can account for but a small number of cases. In reality, in most of the patients we observe not a simple *statu quo*, but a true retrogression. Facts that have been acquired partly disappear, or at least cease to be co-ordinated so as to give rise to generalized ideas. Moreover, the disorders of affectivity and of the will cannot be accounted for by simple arrest of development.

The most probable hypothesis is that of Kraepelin: dementia præcox is a disease of autointoxication. Many of the physical symptoms described above resemble the phenomena by which intoxications of exogenous or of endogenous origin are usually manifested: epileptiform attacks, hysteriform disturbances, disorders of the circulation and of the secretions, and alterations of the general nutrition.

Possibly the poison is the consequence of a disorder of secretion of the genital organs. The frequent appearance of the first symptoms at the age of puberty, or in the female at the time of her first childbirth, and the occasional development of the disease in interrupted stages, each corresponding to a period of pregnancy, are arguments in favor of this hypothesis.

[A suggestive and far-reaching hypothesis bearing on the pathogenesis of dementia præcox has recently been advanced by Adolf Meyer.

It is quite true that in many cases of dementia præcox we find a history of some infection or traumatism which is evidently to a greater or lesser extent to be held responsible for the mental disturbance. But it is equally true that in the majority of cases, so far as

we know, the disorder develops without any such cause.

Further, we have no actual evidence of any real pathology of the disease, in the ordinary medical sense of the term, that is to say, in the sense of constant structural or chemical alterations.

Is not the assumption that some such pathological process necessarily underlies the development of the psychosis purely gratuitous?

From Meyer's point of view such a clinical picture as that of dementia præcox may be the result of an acquisition and unchecked development of vicious mental habits or of abnormal "types of reaction" which ultimately replace by substitution healthy and efficient mental reactions such as are necessary in our constant acts of adjustment to our usual environment as well as to newly arising situations.

The importance of this view lies in its bearing on therapeutics and, to a still greater extent, on prophylaxis.

To quote from the original paper:[1]

"Every individual is capable of reacting to a very great variety of situations by a limited number of reaction types."

"The full, wholesome, and complete reaction in any emergency or problem of activity is the final adjustment, complete or incomplete, but at any rate clearly planned so as to give a feeling of satisfaction and completion. At other times there results merely an act of perplexity or an evasive substitution. Some of the reactions to emergencies or difficult situations are mere temporizing attempts to tide over the difficulty, based on the hope that new interests crowd out what would be fruitless worry or disappointment; complete or incomplete forgetting is the most usual remedy of the results of failures, and just as inattention and distraction

[1] Adolf Meyer. *Fundamental Conceptions of Dementia Præcox.* British Med. Jour., Sept. 29, 1906.

correct a tendency to overwork, so fault-finding with others, or imaginative thoughts, or praying, or other expedients, are relied upon to help over a disappointment, and as a rule, successfully. Other responses are much more apt to become harmful, dangerous, uncontrollable — a rattled fumbling, or a tantrum, or a hysterical fit, or a merely partial suppression, an undercurrent, an uncorrected false lingering attitude, or whatever the reaction type of the individual may be. What is first a remedy of difficult situations can become a miscarriage of the remedial work of life, just as fever, from being an agent of self-defence, may become a danger and more destructive than its source. In the cases that tend to go to deterioration certain types of reactions occur in such frequency as to constitute almost pathognomonic empirical units. I would mention hypochondriacal trends, ideas of reference, fault-finding or suspicions, or attempts to get over things with empty harping, unaccountable dream-like frequently nocturnal episodes, often with fear and hallucinations, and leading to strange conduct, such as the running out into the street in nightdress, etc., or ideas of strange possessions with hallucinatory dissociations, or the occurrence of fantastic notions. All these appear either on the ground of a neurasthenoid development, or at times suddenly, on more or less insufficient provocation, with insufficient excuse, but often enough with evidence that the patient was habitually dreamy, dependent in his adjustment to the situations of the world rather on shirking than on an active aggressive management, scattered and distracted either in all the spheres of habits or at least in some of the essential domains of adjustment which must depend more or less on instinct or habit. On this ground reaction types which also occur in milder forms of inadequacy, in psychasthenia and hysteria or in religious ecstasy, etc., turn up on more inadequate foundation and with destructive rather than helpful results. We thus obtain the negativism no longer as healthy indifference and more or less self-sparing dodging, but distinctly as an uncontrollable, unreasoning, blocking factor. We obtain stereotypies not merely as substitutive reactions and automatisms on sufficient cause such as everybody will have, but, as it were, as a reaction of dead principle in a rut of least resistance. We see paranoic developments with the same inadequacy of starting point and failure in systematization, and in holding together the shattered personality, etc."

"Therapeutically, this way of going at the cases will furnish the best possible perspectives for action. We stand here at the begin-

ning of a change which will make psychiatry interesting to the family physician and practitioner. As long as consumption was the leading concept of the dreaded condition of tuberculosis, its recognition very often came too late to make therapeutics tell. If dementia is the leading concept of a disorder, its recognition is the declaration of bankruptcy. To-day the physician thinks in terms of tuberculous infection, in terms of what favours its development or suppression; and long before "consumption" comes to one's mind, the right principle of action is at hand — the change of habits of breathing poor air, of physical and mental ventilation, etc. In the same way, a knowledge of the working factors in dementia præcox will put us into a position of action, of habit-training, and of regulation of mental and physical hygiene, as long as the possible "mental consumption" is merely a perspective and not an accomplished fact. To be sure, the conditions are not as simple as with an infectious process. The balancing of mental metabolism and its influence on the vegetative mechanisms can miscarry in many ways. The general principle is that many individuals cannot afford to count on unlimited elasticity in the habitual use of certain habits of adjustment, that instincts will be undermined by persistent misapplication, and the delicate balance of mental adjustment and of its material substratum must largely depend on a maintenance of sound instinct and reaction type."

Meyer's views gain additional significance in the light of the more recent contributions of August Hoch,[1] who finds in a large percentage of his cases of dementia præcox (51–66%) evidences of a peculiar mental make-up which he has termed "shut-in personality." This make-up he defines as follows: "Persons who do not have a natural tendency to be open and to get into contact with the environment, who are reticent, seclusive, who cannot adapt themselves to situations, who are hard to influence, often sensitive and stubborn, but the latter more in a passive than an active way. They show little

[1] *Constitutional Factors in the Dementia Præcox Group.* Rev. of Neurol. and Psychiatry, Aug., 1910.

interest in what goes on, often do not participate in the pleasures, cares, and pursuits of those about them; although often sensitive they do not let others know what their conflicts are; they do not unburden their minds, are shy, and have a tendency to live in a world of fancies. This is the shut-in personality." And he adds further: "What is, after all, the deterioration in dementia præcox if not the expression of the constitutional tendencies in their extreme form, a shutting out of the outside world, a deterioration of interests in the environment, a living in a world apart?" For purposes of control Hoch has examined the histories of his cases of manic depressive insanity and failed to find plain evidences of a marked shut-in personality.[1]]

Treatment. — This is reduced to treatment of the principal symptoms by the usual methods. An effort should be made to combat stereotypy in all its forms by appropriate suggestion and by some occupation, whenever it is possible to make the patient do any work, which is quite frequently the case: the precocious dements constitute a great proportion of asylum workers.

§ 2. Systematized Delusional Insanity.[2]

Isolated by Magnan from the poorly defined group of paranoic conditions, systematized delusional insanity presents a striking analogy to certain forms of dementia præcox, which fact has led Kraepelin to include it under the heading of paranoid dementia. Conforming to French usage, I shall describe it as a separate morbid

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[1] Journ. of Nerv. and Ment. Dis., Apr., 1909.

[2] *Délire chronique à évolution systématique.*

entity, which appears to me to be justifiable, at least provisionally, in view of the following considerations:

(1) Systematized delusional insanity appears at an age when dementia præcox is already rare, — after thirty years in the majority of cases;

(2) The delusions present perfect systematization and a regular evolution, which is unusual in dementia præcox;

(3) The dementia does not appear for many years. Sometimes it does not appear at all, even when the patient has reached an advanced age (Falret).

The name "dementia præcox" would scarcely be applicable to an affection usually appearing at an adult age, and in which intellectual enfeeblement does not supervene until long after the onset, — twenty years or more. Though we may consider this disorder as being very closely related to dementia præcox, it would seem that more facts are necessary to establish the identity of the two conditions.

The evolution of systematized delusional insanity occurs in four periods, which we shall consider hastily, for the symptoms encountered in each of these periods have already been described, and it is but the special grouping of these symptoms that imparts to this disease its characteristic aspect.

First period: incubation. — This period is always a prolonged one. The personality of the patient undergoes a slow and insensible, though profound, transformation. The symptoms observed at the beginning present no definite character. They consist in an *irritability* and a singular *pessimism*, with which are often associated *hypochondriacal ideas*.

Little by little these pathological phenomena become more and more marked and develop into ideas of persecution. Suspiciousness and uneasiness appear first, followed later by *delusional interpretations:* the patient imagines he is watched as he walks in the street, he discovers a hidden meaning in a conversation. Illusions of all the senses, but especially those of hearing and of smell, gradually appear as the affection reaches the second period.

Second period: systematization of the delusions; appearance of hallucinations. — Hallucinations are constant and affect all the senses *except vision.* They are always of a painful character. The first to appear are *phonemes* (verbal auditory hallucinations), which, vague at the beginning, assume after a certain time remarkable distinctness. They are followed by the appearance of hallucinations of taste, smell, general sensibility, including the genital sense, and, later on, by motor hallucinations also.

Visual hallucinations are extremely rare, if ever present at all. On the other hand, illusions of sight are as frequent as those of the other senses, often taking the form of *mistakes of identity.*

By degrees the delusions group themselves and become systematized. The hallucinations are interpreted and explained. The patient recognizes the voices, discovers his persecutors, the methods they make use of, and the aims they pursue. As he is perfectly convinced of the reality of his delusions, he reacts, seeking to protect himself against his imaginary enemies and to find justice. The means to which he may resort are infinitely varied: protests before authorities and

before the public, frequent changing of residence, and but too often assaults and murder.

As the disease advances, more and more evident signs of psychic disaggregation appear: echo of the thoughts, autochthonous ideas, motor hallucinations, etc.

Third period: ideas of grandeur. — Some authors regard the ideas of grandeur as a logical sequence of those of persecution, resulting from the following line of reasoning, which the patient is assumed to pursue more or less consciously: "They persecute me so unmercifully and with such stubbornness because they are afraid of me or jealous of me." This explanation is perhaps applicable to a small number of cases, but not generally so.

The real cause of the ideas of grandeur is invariably mental deterioration which makes its appearance at this period.

These ideas are of all possible forms: ideas of wealth, of power, or of transformation of the personality. One patient was God and his persecutor was the devil. Another reigned over the planet Mars, and once decided to destroy the earth by means of aeroliths.

Fourth period: dementia. — Mental deterioration here becomes clearly apparent. Its character is very similar to, if not identical with that of dementia præcox, and this is undoubtedly strong evidence of a close relationship existing between the two diseases.

Almost always some stereotyped delusions persist as a last remnant of the former system of delusions.

The *evolution* of the disease is very slow, often requiring twenty or thirty years for its completion.

The *prognosis* is fatal from the psychic standpoint.

But the morbid process does not affect the organic functions, and the patients may live to an old age.

Systematized delusional insanity in its typical form, as described by Magnan, is a very rare disease. *Heredity* is here found as frequently as in most other psychoses, including dementia præcox. But the predisposition is often entirely latent, the disease often developing in subjects previously of normal intelligence. Perhaps it is to this fact that the perfect systematization of the delusions and its extremely slow development are to be attributed.

Can we assume that this affection, like dementia præcox, is due to an autointoxication? This is a question which the future alone can answer.

The *treatment* is limited to careful supervision which in most cases cannot be carried out outside of an asylum.

CHAPTER IX.

GENERAL PARESIS.

Synonyms. — Chronic arachnitis and chronic meningitis (Bayle). Incomplete general paralysis (Delaye). General paralysis of the insane or chronic diffuse periencephalo-meningitis (Calmiel). Paralytic insanity (Parchappe). Progressive general paralysis (Lunier, Sadras). Paralytic dementia (Baillarger). Chronic diffuse interstitial encephalitis (Magnan). *In German:* Progressive allgemeine Paralyse. In general it is convenient to employ the Latin term *dementia paralytica.*

The earliest mention of the somatic and psychic disorders corresponding to general paresis dates back to 1798, when Haslam, pharmacist at the Bethlehem Hospital, described in a few lines and with remarkable precision the principal features of the disease.

It was only in 1822, thanks to the memorable work of Bayle, that general paresis gained a footing in classical psychiatry. The history of this disease is a subject much too vast for the limits of this work. It has been quite recently treated by Vignaud[1] in his inaugural thesis, which contains, in addition to a good bibliography, a very clear exposition of opinions and theories advanced on the question of general paresis from the point of view of its pathogenesis as

[1] *Histoire de la paralysie générale.* Paris. Thèse.

well as from that of its etiology and anatomical lesions.[1]

Prodromal period. — It is marked (*a*) by changes of affectivity and of the character; (*b*) by neurasthenic and psychasthenic phenomena.

(*a*) The mood becomes either irritable and changeable, with sudden alternations of joy and sorrow, kindness and anger, discouragement and optimism; or gloomy, and marked by pessimism and by a *tædium vitæ* which may lead the patient to attempts at suicide. Often the patient is conscious of being stricken with a grave disease and has dark presentiments for the future.

(*b*) The *neurasthenic* and *psychasthenic* symptoms are usually very pronounced: a feeling of general lassitude, fatigue, muscular weakness, diffuse neuralgic pains, headache, a sort of grinding sensation felt especially in the head, and other peculiar sensations which the patient is unable to describe clearly: it may seem to him that his head is empty, that his brain is falling to pieces, etc.

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[1] Monographs on general paresis: Lasègue. *De la paralysie générale progressive.* Th. d'agrég. Paris, 1853; also *Leçons sur la paralysie générale,* 1883.—Falret. *Recherches sur la folie paralytique et les diverses paralysies.* Paris, 1853.—Voisin. *Traité de la paralysie générale.* 1879.—Baillarger. *Théorie de la paralysie générale.* Ann. méd. psych., 1883.—Mendel. *Die progressive allgemeine Paralyse der Irren,* 1880.—Mairet et Vires. *De la paralysie générale.* Etiologie. Pathogénie. Traitement. 1893.—Magnan et Sérieux. *La paralysie générale* (collection Léauté), 1894.—Coulon. *Considérations sur la nature de la paralysie générale.* —Klippel. *Les paralysies générales.* L'œuvre médico-chirurgicale, 1898. — For a bibliography of general paresis, see G. Ballet et J. Rogues de Fursac. Article *Paralysie Générale* in Traité de Médecine Charcot-Bouchard-Brissaud. Paris, 1905.

These symptoms are, however, not identical with those of true neurasthenia. The following are, according to Ballet, the most important points of difference:

"(1) The stigmata, that is to say, the permanent signs of neurasthenia (helmet sensation, pain in the spine), are usually absent.

"(2) Neuralgic pains occupy a prominent place in the clinical picture. These pains (excluding the lightning or lancinating pains dependent upon the spinal lesions of general paresis) are disseminated, essentially mobile, varying from day to day. The patients often speak of them as '*pains that are peculiar and unusual.*'

"(3) From one moment to another sudden changes are produced in the state of the patient. . . . It is surprising to see the neurasthenic paretic, who but a short time before complained of severe suffering and ill health, forget his pains under the influence of some incident or conversation in which he is interested and in which he takes an active part. These momentary changes, appearing at the instance of chance occurrences, may manifest themselves in a more lasting manner on instituting some treatment, though insignificant. The patient, hitherto excessively discouraged and gloomy, speaks with joy of his cure; his satisfaction is exuberant and out of proportion, as was his despair shortly before."

Often some transient phenomenon, exceptional or unknown in neurasthenia, alarms the physician: slight seizures, transitory strabismus with diplopia, slightly marked momentary disorders of speech.

The period of prodromata is seldom absent. It is often very long, lasting several months or even years.

§ 1. Essential Symptoms.

It will be necessary to consider these apart from accessory and inconstant symptoms, by the presence of which they are often masked.

The essential symptoms are:

(A) Intellectual enfeeblement;

(B) Disorders of motility;

(C) Pupillary disturbances;

(D) Changes in general nutrition.

(A) **Intellectual enfeeblement.** — It presents two fundamental characteristics:

(1) It affects all the psychic functions in their *ensemble;*

(2) It is progressive, and usually rapidly so. This latter characteristic distinguishes paralytic dementia from senile dementia, the development of which is much slower.

Let us analyze rapidly the elements constituting this intellectual enfeeblement.

(*a*) *Memory.* — It is profoundly affected from the very beginning. The amnesia is both *anterograde,* by default of fixation, and *retrograde,* by destruction of impressions. It is *essentially incurable.*

The disappearance of old impressions probably follows the law of amnesia; but its course is so rapid that it is difficult to demonstrate this fact. The impressions of youth and childhood become very rapidly effaced, so that after a relatively short period only a few confused and distorted recollections remain in the mind of the patient, and these are only with great difficulty recovered from the general wreck.

(*b*) *Consciousness and perception.* — Their disorders are manifested by:

(I) A more or less complete loss of *orientation* in all its forms;

(II) A more or less confused perception of the external world.

The clouding of consciousness and the confusion attain in the terminal period, and in certain forms in the beginning, an extreme intensity.

(*c*) *Attention and association of ideas.* — The attention of the patient is difficult to rouse as well as to fix. In some cases, early in the disease in phases of excitement, exaggeration of the mental automatism gives rise to true flight of ideas. This, however, is of exceptional occurrence; as a rule there is sluggish formation of associations of ideas demonstrable by psychometry or by an ordinary clinical examination. In the cases in which some mental activity is still possible there is rapid mental fatiguability, so that the patient is no longer able to do mental work of any complexity; in advanced stages even the simplest intellectual operations are impossible.

(*d*) *Affectivity.* — Its changes are characterized by morbid *indifference* and *irritability*, associated in the manner already described.[1] Both the indifference and the irritability are apt to be very marked. The general paretic takes no interest in his own business affairs or in the welfare of his relatives. Grave occurrences fail to impress him. On the other hand, he is subject to fits of terrible anger on the slightest provocation.

The *moral sense* and *regard for conventionalities*

[1] See p. 90.

disappear entirely. The patient commits the most ridiculous and most revolting acts with perfect serenity and is astonished when his liberty of action is interfered with.

(*e*) *Judgment.* — Its disorder finds expression in the patient's total lack of insight into his condition. Together with the amnesia, it explains the inconsistencies in the patient's conduct and speech; he is unable to appreciate the most flagrant contradictions. To a given question the paretic gives the first answer that enters his mind, whether it happens to be false or correct, absurd or plausible.

(*f*) *Reactions.* — As might be expected, they are always *impulsive.* The reflections, that is to say the series of associations preceding the act, become more and more reduced. As the patient sees what he wants he immediately takes it. He wants an object that he sees exposed for sale in a shop, — he takes it and carries it off without taking the trouble to pay for it. A paretic leaning over the parapet of a bridge drops his cane. To recover it, reasoning that a straight line is the shortest distance between two points, he jumps after it into the water. Stereotyped movements (movements of sucking, grinding the teeth, etc.) and negativism are frequent. Cataleptoid attitudes are occasionally seen.

(B) **Motor disturbances.** — The fundamental motor disturbances, the only ones that need occupy us in this connection, are three in number:

(*a*) Progressive muscular weakness; (*b*) Tremors; (*c*) Motor incoördination.

(*a*) *Muscular weakness.* — It is most marked in the

latter periods of the affection, when it accompanies the general cachexia. It involves all the muscles and is associated with more or less pronounced atrophy so that there is more or less complete disability.

(*b*) *Tremors.* — Unlike the muscular weakness, these constitute an early symptom. They are of two kinds: fibrillary tremors and tremors *en masse.*

(I) The fibrillary tremors consist in rapidly repeated contractions of very small groups of muscular fibers. It is a sort of twitching. It is observed chiefly in the tongue and in the peribuccal muscles.

(II) Tremors *en masse* usually appear as coarse oscillations irregular in frequency and in amplitude. They become evident on voluntary movements and form a sort of point of transition between true tremors and muscular ataxia. They are seen especially in the upper extremities and in the tongue. The tongue projected from the mouth executes to-and-fro movements very aptly described by Magnan as "trombone movements."

(*c*) *Motor incoördination.* —This first becomes evident in the most delicate movements and manifests itself early by impairment of the *speech* and of the *handwriting.*

I. The *impairment of speech,* clearly apparent in advanced stages, is sometimes difficult to notice at the beginning and only becomes evident on resorting to special tests, such as prolonged reading in a loud voice or the pronunciation of special words known as test-words: Methodist Episcopal, fourth cavalry brigade, national intelligence, etc.

Sometimes the impairment of speech becomes less

evident or even disappears temporarily during excitement. Often it becomes accentuated after apoplectiform or epileptiform attacks.

It is of various types, the principal of which are the following:

(α) Drawling, tremulous, indistinct speech;

(β) Scanning speech analogous to that of disseminated sclerosis;

(γ) Hesitating speech: the patient stops in the middle of a word and seems to hesitate before finishing it;

(δ) Omission of one or of several syllables: the patient pronounces, for instance, "Methist Pispal" instead of Methodist Episcopal;

(ε) Reduplication of one or of several syllables, as "constititutional";

(ζ) Interchange of syllables: "constutitional."

These types may be combined so as to form mixed types of infinite varieties.

II. The *handwriting* is characterized by its irregular appearance, and by the coarse tremors seen in the strokes. These motor disorders are always associated with phenomena of intellectual origin: omissions or, on the contrary, repetitions of letters, syllables, or words, numerous glaring orthographical errors. All these features impart to the handwriting of paresis its characteristic aspect.

Usually the patient is totally unconscious of these symptoms. If accidentally he notices them, he is neither surprised nor alarmed. The explanations which he gives are childish: he does not speak well because he has lost a tooth, or he writes with difficulty because his hands are cold.

Slight in the beginning, the impediment of speech and the impairment of handwriting become progressively aggravated, so that in the terminal stage of the disease the writing becomes shapeless scribbling and the speech unintelligible stammering.

At the end of the disease it is almost constant to note *disturbance of deglutition* caused by paresis and incoördination of the pharyngeal muscles, which may entail death by suffocation.

(C) **Pupillary disorders.** — Appearing sometimes very early, their importance is so great that in their absence the diagnosis should as a rule be reserved.[1]

They are dependent upon an *internal ophthalmoplegia of gradual and progressive development* (Baillet and Bloch), which is manifested by changes in the shape, size, and reactions of the pupil.

(*a*) *Changes in the shape.* — The pupil loses its circular shape and becomes oval or irregular. This symptom seems to be frequent, but of its diagnostic value little is known.

(*b*) *Changes in size.* — These are of three kinds:

I. *Myosis*, at times so marked that the pupils are reduced to pin-hole size.

II. *Mydriasis*, also very well marked in certain cases.

III. *Inequality*, which may be produced by three different mechanisms:

(α) One pupil is normal, the other myotic or mydriatic;

(β) One pupil is mydriatic, the other myotic;

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[1] Mignot. *Contribution à l'étude des troubles pupillaires dans quelques maladies mentales.* Thèse de Paris, 1900.

(γ) Both pupils are mydriatic or myotic, but are unequally dilated or contracted.

It is important, in order to make a satisfactory examination of the pupils, to place the patient in such a light that both eyes receive an equal amount of illumination. It is also important to vary the intensity of illumination, because an inequality that appears doubtful in a strong light may become very evident in a weaker light, and vice versa.

Pupillary inequality is sometimes congenital. Moreover, it is encountered in many affections other than general paresis: dementia præcox, compression of the sympathetic nerve, etc.; therefore it does not by any means constitute a pathognomonic sign.

(*c*) *Changes in the reflexes.* — These consist in changes in the *light reflex*, or in the *accommodation reflex*, or in both. They are either binocular or monocular.

Disorders of the pupillary reactions may be associated as in the Argyll-Robertson type: abolition of the light reflex with persistence of the accommodation reflex. This combination is, however, considerably less frequent in paresis than in tabes.

At the beginning of the disease the reactions are not completely abolished, but are simply paretic.

The phenomenon of Piltz is often observed.[1]

It is not uncommon for the speech defect and the pupillary signs to persist through complete mental remissions.

(D) **Changes in general nutrition.** — Though constant and very important they have thus far received but

[1] See p. 227.

little attention. Clinically we find changes in the weight and in the urinary secretion.

The onset is almost always marked by considerable loss of weight. Later the weight varies with the clinical form.

In the excited and in the depressed forms of rapid evolution the loss of weight is marked and progressive, and the patient rapidly becomes cachectic.

In the expansive or demented forms the weight often rises after the initial fall, the patient then becoming corpulent and remaining so until the terminal stage, when the weight may fall suddenly and continue to drop as marasmus is established.

Organic crises may be noted in the course of the disease (Arnaud); they consist in a transitory but considerable loss of weight, the cause of which is unknown.

The changes in the urinary secretion indicate general sluggishness of nutrition. They have been especially studied in connection with the second period of the disease. The principal ones are polyuria, low specific gravity of the urine, slight albuminuria, very considerable diminution of urea and of phosphates, and increase of chlorides.[1]

A study of the blood changes might also be of great interest. The work already done along this line is unfortunately very scant and inconclusive. Capps[2] found a slight diminution of hemoglobin and of the red blood-cells.

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[1] Klippel et Serveaux. *Contribution à l'étude de l'urine dans la paralysie générale.* Congrès des médecins aliénistes et neurologistes, 1895.

[2] *American Journ. of the Med. Sc.*, 1896, No. 290.

§ 2. Inconstant Symptoms.

Many symptoms though not constant are, however, frequent and important.

This group comprises:

(A) Intellectual disorders;

(B) Motor disorders;

(C) Disorders of the reflexes;

(D) Disorders of sensation;

(E) Trophic disorders;

(F) Visceral disorders;

(G) Epileptiform and apoplectiform seizures.

(A) **Intellectual disorders.** — The principal are delusions and hallucinations.

(*a*) The *delusions* of the general paretic are of the demented type; that is to say, they are *absurd, mobile, multiple,* and *contradictory.*

They assume all forms;

(*α*) *Ideas of grandeur:* the patient is immensely rich; millions are not adequate; the general paretic counts his riches by trillions; he governs the forces of nature, resuscitates the dead, is the incarnation of all the great men of the present and of the future, destroys and reconstructs the universe by a single gesture, etc.

(*β*) *Melancholy ideas:* ideas of culpability: one patient accused himself of having hastened the end of the world by ten thousand centuries; hypochondriacal ideas: another patient refused to eat because he had "a bicycle manufactory in the throat"; ideas of negation: the organs are liquefied or replaced by air, the body is nothing but a putrefied corpse; ideas of ruin analogous to those of melancholia.

(γ) *Persecutory ideas:* they are either primary or secondary to ideas of grandeur. In the latter case the patients complain that they have been robbed of their immense fortune, that they are not treated with the respect to which they are entitled, that they are unjustly detained in the asylum, etc. Occasionally at the beginning persecutory ideas become systematized,[1] but always imperfectly. A close examination always reveals certain flagrant contradictions by which the intellectual enfeeblement manifests itself.

(*b*) The frequency of *hallucinations* in general paresis is a much disputed question. Some authors believe that they are almost constant (Christian and Ritti), or at least frequent (Wernicke); others claim that they are rare (Magnan, Dagonet, Krafft-Ebing). The latter opinion is the more widely accepted one and I believe the more correct one.

The hallucinations may affect any of the senses, including the muscular sense.

Illusions are much more frequent than hallucinations.

Psycho-sensory disorders are encountered chiefly in the excited form of general paresis, in which they are associated with incoherent delusions.

The systematized persecutory delusions which are occasionally met with are apt to be associated with auditory hallucinations.

As in all cases of pronounced dementia, the reactions and the emotional tone do not always harmonize with the delusions. A general paretic who believes himself to be dead may eat heartily and remain otherwise unaffected.

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[1] Magnan. *Leçons cliniques.*

The following case illustrates the type of delusions in general paresis:

Marie B., thirty-two years old, café singer. — Family history unknown. — Patient occasionally drinks to excess. Syphilis very probable, as patient has lived for some years with a man who had syphilis. She had two still-births. — She was arrested for creating a disturbance on a public thoroughfare and was sent to the Clermont Asylum. On the way to the asylum she was greatly excited, spoke of her immense fortune, distributing millions among those about her, made indecent signs to all the men she met, but submitted readily to being taken to the asylum.

Two days after her arrival at the asylum, at the time that this record was made, the patient showed marked excitement. Her face was red, her eyes sparkling. She was very voluble, yet quite tractable. Her orientation was very imperfect, delusions extremely active. She said that she was in a town called Clermont, and that she had been there three months; that it was the spring of 1894 (in reality March, 1904); that the institution she was in was a hospital for wounded soldiers. It was pointed out to her that there were no soldiers there. "That is true," she said, "they are in Nice. I take good care of them. I do not put them in a dungeon, but in a beautiful room." She knew at once that there were insane patients at the asylum, but there are no longer to be any there, as to-morrow she is going to cure them all with a good cathartic. She had already cured her husband "of a filthy disease by cleaning out his bowels." This husband of hers married the daughter of a colonel who left him two days after the wedding. The patient states that she herself had also been sick; she was operated on by Duchess de C., then went for six months without making water or moving her bowels, but she was never sick enough to go to bed, neither were her horses. She has ten thousand race horses that can make twelve-hundred miles an hour without getting out of breath. The proof is that they went from Paris to Marseilles in four and a half hours. She is very wealthy, she has a million francs. When it was pointed out to her that a million is not so very much, she said she had made a mistake, she should have said thirty million francs. At any rate it is going to be increased to one hundred and fifty million this week. All this fortune came to her by inheritance. She also has several hundred mansions which she will convert into hospitals. Everybody around her shall be happy. The nurse who is taking care of her shall

receive a hospital, a mansion, three broughams, a landau, two thoroughbred horses, male and female, so that they may have young ones, a race track, an angora cat, and an estate with cultivated grounds. Another patient struck her without provocation; "That's nothing! She shall have her little million like everybody else, just the same, also a suit of man's clothes in which she can follow the regiments." — She has two boys, "each twenty years old"; she herself is twenty-five years old. She had her first child at the age of twelve. She states that she drinks a good deal. In all the towns through which she passed the station-masters and those in charge of provisions gave her the key to their wine cellar in order that she might help herself at her pleasure. When asked whether she could drink ten quarts of wine in a day, she exclaimed: "Ten quarts! a good deal more, at least a barrelful, for I drink a quart with every meal!" Her memory is greatly impaired; what little correct information the patient gives is lost in the multitude of disconnected pseudo-reminiscences. — *Physical signs:* Distinct speech defect shown in her spontaneous utterances as well as by test words. The pupils show scarcely any reaction to light; they react to accommodation readily. Marked hyperæsthesia over entire surface of the skin; the slightest pricking with a pin causes marked pain. For several minutes during the examination simple contact brought forth piercing cries. Considerable loss of flesh.

(B) **Motor disorders.** — The most frequent are *phenomena of paralysis and of paresis*, which may assume the most varied types: monoplegia, hemiplegia, facial paralysis. The latter, generally slight, constitutes a very frequent and often an early symptom.

The paralysis is either flaccid or associated with contractures.

A certain degree of motor aphasia is often observed.

Paralysis in many cases follows a seizure and is usually transitory.

Convulsions will be considered in connection with epileptiform seizures.

Sometimes choreiform movements are observed in

general paresis (Vallon and Marie), also tremors analogous to those of multiple sclerosis and of athetosis.

(C) **Disorders of the reflexes.** — The best known and the most important are the changes in the *patellar reflex.*

There is nothing constant about these, as they vary not only in different patients but also in the same patient at different times.

The patellar reflexes may be *normal, exaggerated, diminished,* or *abolished.* Sometimes they are *unequal* on the two sides: one may be exaggerated, the other abolished.

Complete abolition is seen in the tabetic form, exaggeration in the spastic form.

Other tendon reflexes have been but little studied. It has been noted that exaggeration of deep reflexes is generally more marked in the upper extremities.

As to cutaneous reflexes, they are sometimes exaggerated, more often abolished. The Babinski sign is present only in cases with lesions of the pyramidal tracts, especially in those with combined sclerosis.

(D) **Disorders of sensation.** — These have been well described by Marandon de Montyel, from whom the following facts have been borrowed:

(*a*) *Sensibility to pain* is often diminished, less frequently abolished, rarely exaggerated. Some patients present retardation of the perception of pain. Disorders of the pain sensibility often persist during remissions.

(*b*) *Tactile sensibility* is usually normal. However there may be hyperæsthesia, hypoæsthesia, and even complete anæsthesia. These disorders disappear during remissions.

(*c*) *Special senses:* disorders of hearing (more or less marked deafness, tinnitus, etc.) are not infrequent, but by reason of their common occurrence in other forms of insanity and in normal individuals they are of but slight importance.

In some cases, however, the deafness is of central origin and seems to be directly due to the meningo-encephalitis. Recently I had under my observation a paretic who developed bilateral deafness following an apoplectiform attack. At first his deafness was remittent; on some days the patient could hear fairly well, while on other days he understood what was said to him only by the movements of the lips and, of course, but very imperfectly. Now his deafness is complete.

Amblyopia or even complete *amaurosis* is sometimes encountered. In certain cases it depends upon atrophy of the optic nerve.

The senses of taste and smell are often greatly impaired.

Disorders of the generative function are quite frequent and vary with the stage of the disease.

The onset is often marked by *genital excitation,* which, associated with the mental enfeeblement, may lead to indecent or criminal acts: exhibitionism, rape, etc. Later this excitation is replaced by absolute *impotence.*

(E) **Trophic disorders.** — These affect all the tissues.

Osseous tissue: abnormal fragility of the bones, fractures caused by slight traumatisms or even occurring spontaneously.

Connective and cartilaginous tissues: the trophic disorders are here chiefly manifested by *hæmatoma*

auris,[1] which consists in an extravasation of blood into the tissues of the auricle.

The exact seat of the extravasation in *hæmatoma auris* is still a disputed question. Some are of the opinion that it is in the subcutaneous tissues, others believe that it is between the cartilage and the perichondrium, and still others think that it is within the cartilage itself.

Manifestations of trophic disorders are usually favored by traumatisms. It must not be forgotten that the great majority of *hæmatomata auris* are on the left side and that when one receives a blow it is usually on that side. It is possible to reduce considerably the number of *hæmatomata* in asylums by holding the attendants directly responsible for their occurrence.

Skin. — Deformity and grooving of the nails,[2] diverse eruptions, *herpes*. The latter lesion indicates involvement of the cord in the pathological process; it may constitute one of the first symptoms of the disease.

The most frequent and most grave cutaneous disturbances are *pressure-sores*.

Whether bilateral or unilateral they develop chiefly at the points bearing the weight of the body while the patient is in bed; hence the sacral, gluteal, and trochanteric bed-sores. The sacral bed-sore is very often median.

In their *dimensions* they vary from small sores of the size of a dime to those exceeding the size of the palm of the hand.

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[1] Gatian de Clérambault. *Contribution à l'étude de l'othématome.* Thèse de Paris, 1899.

[2] Trèves. *Su alcani alteretzioni distrophiche delle unghi.* Rivist. di clin. medic., 1899, No. 6.

Their *depth* also varies in different cases. Some remain superficial, while others destroy the skin, subcutaneous tissue, and muscles, and expose the bone.

Their *course* is usually progressive; that is to say, they increase in extent and in depth. Sometimes they heal under the influence of appropriate treatment.

Muscles. — Localized muscular atrophy is rare. It affects different groups of muscles and may have one of two origins, resulting either from degeneration of the white columns of the cord, which, in its turn, is caused by cerebral lesions (Grellière),[1] or from primary degeneration of the cells in the anterior horns (Joffroy).[2]

(F) **Visceral disorders.** — These are dependent either upon the disease itself or upon a complication. It is unfortunately difficult to determine in any given case what the real cause is.

(*a*) *Digestive apparatus:* Its functions become disturbed chiefly in the terminal stage of all forms, and early in the depressed and excited forms: anorexia, vomiting, constipation, or intractable diarrhœa. In the expansive form one often notes a veritable boulimia.

(*b*) *Cardio-vascular apparatus:* Evidences of atheroma, myocarditis, rapid and feeble pulse in the terminal cachexia. Aortic insufficiency is not rare and is probably due to syphilis, which is so frequent in the history of general paretics.

(*c*) *Kidneys:* Slight albuminuria is frequent. This with the low specific gravity of the urine is an indication of a certain degree of renal insufficiency.

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[1] Grellière. *Atrophie musculaire dans la paralysie générale des aliénés.* Paris, 1875.

[2] Joffroy. *Contribution à l'anatomie pathologique de la paralysie générale.* Congrès de Médecine mentale, 1892.

(*d*) *Liver:* Sometimes hypertrophied, more rarely atrophied with phenomena of cirrhosis. The ascites that usually accompanies atrophic cirrhosis of the liver is usually absent in the cirrhosis of general paresis (Klippel).

(*e*) *Respiratory apparatus:* Congestion, broncho-pneumonia, and splenization are frequent complications of the last stage. Pulmonary tuberculosis is, on the contrary, quite rare and usually runs a slow course (Bergonier, Klippel).

(G) **Seizures.**[1] — These are frequent, occurring at all periods of the disease and often marking the onset. They may be fatal. According to Arnaud death from a seizure is the natural mode of termination of general paresis. They are often accompanied by elevation of temperature which is at times considerable. In some cases more or less marked albuminuria is observed, which disappears several hours or several days after the seizure.

On recovery from these seizures, which is most usual, symptoms of apoplexy (paralysis, aphasia) often appear; they are almost always transitory, there being no gross lesions of the corresponding projection-centers. The seizures are generally followed by an aggravation of the fundamental mental and physical symptoms.

The seizures are of two kinds: *apoplectiform* and *epileptiform.*

The former are characterized by more or less complete loss of consciousness associated with complete flaccidity of the limbs.

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[1] Pierret. *Les attaques épileptiformes et apoplectiformes dans la paralysie générale.* Progrès médical, 1897.—Arnaud. *Arch. de neurol.*, 1897.—Bonnat Thèse de Paris, 1900.

The latter consist in *general* or *localized* convulsions. The general convulsions sometimes so closely simulate epilepsy as to be mistaken for it. The localized convulsions assume the aspect of Jacksonian epilepsy (monocrural, monobrachial, facial). The loss of consciousness accompanying the partial convulsions is either complete or reduced to a slight degree of confusion, as in the case of convulsions due to focal lesions, such as cerebral tumor and the like.

§ 3. Forms. Evolution. Diagnosis.

The principal forms of general paresis are:

(A) The demented form;

(B) The expansive form;

(C) The excited form;

(D) The depressed form;

(E) The spinal forms: { tabetic; spastic.

A. The demented form. — This form constitutes from the psychic standpoint the pure type of general paresis, free from accessory symptoms.

The *onset* is marked chiefly by *indifference* and *loss of memory.*

When the disease is fully established the symptoms are those of profound mental enfeeblement, which we have already described, associated with the characteristic physical disorders.

This form is frequent; its *evolution* is rapid and not interrupted by remissions.

B. The expansive form. — Also frequent.

Special features:

Euphoria, often very marked.

Effusive benevolence, interrupted by transitory outbreaks of anger.

Ideas of self-satisfaction and ideas of grandeur (hallucinations are very rare).

Excitement, loquaciousness.

The disease begins with a morbid activity and slight excitement, which, associated with disorders of judgment, often lead the patient to ruinous deeds, misdemeanors, and even crimes. Unnecessary purchases, absurd enterprises, violations of decency, rape, and swindling are common. It is this stage that constitutes chiefly the medico-legal period of general paresis.

The *evolution* of this form is slow. The duration of the illness quite frequently exceeds three years. Remissions are frequent.

C. **The excited form.** — This sometimes begins with a state of excitement and confusion resembling mania or acute confusional insanity.

Its special features are:

Complete loss of orientation in all its forms;

Incoherent delusions, usually associated with numerous hallucinations;

Violent reactions with very marked motor excitement;

Profound disturbances of general nutrition.

It may run one of two possible *courses:* the excitement may persist and death supervene within a few months or even weeks (galloping general paresis); or the excitement may subside and the disease may pass into one of the other forms, the demented, expansive, or depressed.

D. **The depressed form.** — The onset is marked by a state of depression, so that the trouble may be mistaken

for affective melancholia or for an attack of manic depressive insanity.

The special features of this form are:

Psychic inhibition;

Psychic pain;

Melancholy delusions;

Attempts at suicide that are frequently childish and ineffective;

Peripheral vaso-constriction, impairment of general nutrition;

Refusal of food.

All these disorders, however, harmonize less perfectly with each other than in the other melancholic affections. I shall return to this point in connection with the diagnosis.

The *evolution* is very rapid. Death supervenes early, and is due to cachexia or to some complication (infection favored by the impaired nutrition and the diminished resistance of the tissues).

E. **Spinal forms.** — *Tabetic form.* — This form has at the beginning the aspect of ordinary tabes. The signs of general paresis appear much later.

Its special features are:

Lightning, lancinating pains; girdle sensation;

Marked ataxic symptoms;

Abolition of the patellar reflexes;

Romberg's symptom;

Argyll-Robertson pupil.

The symptomatology of this form of general paresis is, however, not identical with that of pure tabes. The pains are less severe, the urinary troubles less frequent (Joffroy). A curious fact difficult to explain is that

as the symptoms of general paresis become more pronounced, those of tabes (at least the subjective symptoms) seem to disappear.

Spastic form. (*Form with lateral sclerosis.*) — This form is characterized by muscular rigidity, exaggeration of reflexes and epileptoid trembling. The Babinski sign is almost constant. "These symptoms are sometimes bilateral and symmetrical, at other times unilateral, and still at other times, at the onset of the disease, mobile and variable." (Dupré.)

The different forms above described may follow each other, or they may be associated in the most varied ways.

Course and prognosis. — The course of general paresis is progressive, and has been schematically divided into three stages, not including the prodromal stage: (1) stage of onset; (2) stage of complete development; (3) stage of cachexia.

The symptoms at the *stage of onset* are very variable. Generally mental symptoms are the first to attract attention and even to suggest the diagnosis: disorders of memory and orientation; the patient loses his way in the streets with which he is most familiar, forgets on leaving the house what he started out for; there are also irritability, outbursts of anger, attacks of depression or of excitement with elation; more or less active delusions. These symptoms are not incompatible with a certain degree of mental activity; hence the anomalies of conduct leading to antisocial consequences which are at times very grave and which have led some (Legrand du Saulle) to designate this stage of the disease by the name *medico-legal period.* The patient forgets the most common conventionalities and makes use of obscene

language in public and in the presence of his own children. He enters upon foolish, ruinous enterprises, buys dozens of umbrellas, cases full of jewelry, hundreds of copies of the same book. One patient, formerly a notary, ordered in one day twelve tigers from Bengal, "tamed" in Hamburg, five thousand pounds of tar from Paris, and five hundred pounds of coffee from Port-au-Prince. Often a paretic will commit thefts and frauds, so childish in character as to suggest at once serious mental disturbance. Finally the patient's impulsiveness may lead to acts of violence, murder, and, when combined with genital excitation, as is often the case, to violations of decency and to rape.

In this stage the physical signs are generally not fully developed; yet it is rare for them to be entirely wanting.

The second stage, that of *complete development*, is the one in which the fundamental symptoms are well marked and the delusions, if they exist, are in full bloom; yet the patient is still able to walk around and to eat and dress without assistance. There is in this stage as yet no loss of sphincter control except, perhaps, for occasional brief periods.

The *stage of cachexia* is characterized by complete physical and mental dilapidation, by the appearance of pressure-sores, and by permanent loss of sphincter control.

In the immense majority of cases the *prognosis* is fatal. The reported cures, some of which seem to be beyond dispute, are so rare that practically a favorable termination is not to be counted on. Death occurs from cachexia, or from some complication,

or as the result of an apoplectiform or epileptiform seizure.

The average *duration* of the disease is from two to three years. There is, however, no fixed rule with regard to this. In exceptional cases the disease lasts but several months or even weeks (galloping general paresis); in other cases, on the contrary, it is prolonged for ten or more years.

The progress of the disease may be interrupted by *remissions*. Rarely, except at the beginning, are the remissions complete. Almost always the persistence of a certain degree of mental enfeeblement or at least of a psychasthenic condition, and of physical signs exclude any idea of true recovery.

Diagnosis. — The fundamental elements of diagnosis are progressive intellectual enfeeblement *en masse* and the characteristic physical signs.

General paresis may, especially at the beginning, when neither the intellectual enfeeblement nor the somatic signs are well marked, simulate many other psychoses.

Lumbar puncture is here of great service. An increase in the number of lymphocytes in the cerebro-spinal fluid is almost constant in general paresis, especially at the onset.

It is known that *lymphocytosis* of the cerebro-spinal fluid always indicates a meningeal inflammatory lesion. Though its existence does not point positively to general paresis, yet it excludes all affections in which there are no meningeal lesions. Thus are eliminated: dementia præcox, involution melancholia, manic depressive insanity, [epileptic psychoses, alcoholic psychoses,]

and exhaustion psychoses. Further, affections with a basis of a simple process of atrophy, like senile dementia, or with a basis of a central lesion without meningeal involvement (tumors of the centrum ovale, hemorrhages, cerebral softening), are also eliminated.

[Lumbar puncture is a simple and harmless procedure. The only danger, that of infection, can be entirely avoided by the exercise of ordinary precautions of asepsis.

It is, however, contraindicated in cases of great general weakness and in those in which there is evidence of abnormally high intracranial pressure (brain tumor). In such cases lumbar puncture should not be performed, as there is possibility of fatal issue.[1]

The technique of obtaining and examining a specimen of cerebro-spinal fluid is as follows:

The patient is placed on a convenient table, lying on the side, with the back arched as much as possible and with the knees drawn up so that they almost touch the chin; in this position the spaces between the laminæ of the lower lumbar vertebræ are as wide as they can be made. If the patient is so resistive that he cannot be made to assume and retain this position the attempt might best be postponed until he is more tractable.

The back is then scrubbed with soap and water and washed with alcohol, ether, and 1–2000 bichloride, as for any operation. The operator's hands are, of course, also properly sterilized. No anæsthetic, general or local, is required, as the pain caused by the puncture

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[1] See Minet and Lavoit. *La mort suite de ponction lombaire.* L'Écho Medical du Nord, Apr. 25, 1909.

is scarcely greater than that which would be caused by a cocaine injection.

A sterilized hollow needle, about four and a half inches long, is then introduced straight, that is to say, without any vertical or lateral inclination, into the space between the laminæ of the fourth and fifth lumbar vertebræ; if more convenient, the space above or the one below the one indicated may be selected. The usual guide for the intervertebral space is the level of the iliac crests. The point at which the needle should be introduced is a trifle below and a quarter of an inch to one side of the tip of the vertebral spine. Extending from the level of the upper border of the second lumbar vertebra to that of the sacrum is a large meningeal reservoir which is easily reached in the manner described above. In this reservoir are contained the fibers of the cauda equina, which are in no danger of being injured by the point of the needle.

If the needle strikes bone no attempt should be made to alter its direction by partly withdrawing it and inclining it one way or another, as it soon becomes filled with blood and the cerebro-spinal fluid, if thus obtained, will be contaminated. The needle must be withdrawn, cleansed of all blood, and re-introduced at another point. It is best, perhaps, to have two or three needles at hand whenever lumbar puncture is undertaken.

As soon as the point of the needle has entered the meningeal reservoir cerebro-spinal fluid begins to escape from its outer opening either in drops or in a stream, depending upon the degree of intracranial and intraspinal pressure.

Sometimes, as the needle passes through the skin and

subcutaneous tissues, especially when the point is not very sharp, the lumen becomes clogged so that the flow of fluid is partly or completely interfered with. The obstruction is readily removed by passing a wire stylet through the needle.

The fluid is collected in a centrifugal sedimentation tube with a conical bottom. It is important that the bottom of the tube be so small that if the contents are poured out and the tube is completely inverted two or three drops are retained in the bottom by capillary attraction.

5 c.c. of the fluid is collected. If too much fluid is removed the patient is apt to develop severe headaches, attacks of syncope, and vomiting, which may persist for two or three days. In any event the patient must be kept in bed for two days after the operation.

The tube containing the fluid is placed in a centrifugal machine and turned at a high speed for fifteen minutes or longer. The fluid is then carefully poured off into a test tube, — to be used for chemical examination. The sedimentation tube is then cautiously inverted until all but a drop or two of the fluid containing the sediment is drained off.

A pipette with a long capillary end (prepared by softening a piece of small glass tubing in the flame of a Bunsen burner or an alcohol lamp and drawing it out) is now introduced into the bottom of the tube, and the sediment is drawn up into it by capillary attraction. The sediment is transferred to a clean glass cover slip, allowed to dry in the air, and stained. In the process of staining and washing the specimen care must be taken that the cellular elements are not washed off.

Wright's stain[1] presents the advantage of fixing the specimen before staining it and thus attaching it more securely to the cover slip.

The specimen thus stained is mounted on a glass slide and examined with a microscope. If the number of cellular elements averages not over four per microscopic field ($\frac{1}{12}$ oil immersion objective, No. 3 ocular, Leitz) the finding is negative; if from five to ten, it is doubtful; and if over ten, it is negative.

Chemical examination. — Many chemical tests have been proposed. The following seem to be both simple and trustworthy.

Noguchi's butyric acid test.[2] —To 0.2 c.c. of the cerebrospinal fluid in a small test tube is added 0.5 c.c. of an aqueous solution containing 10% of butyric acid and 0.9% of sodium chloride, and the mixture is heated over a flame until it boils; while it is still hot 0.1 c.c. of a 4% solution of sodium hydroxide is added and the mixture is boiled again. A positive result is indicated by the appearance at once or after a few minutes of a finely granular or flocculent precipitate which settles in a little while, the supernatant fluid remaining clear. If no precipitate forms or if a diffuse opalescence develops which does not subside on standing the reaction is negative.

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[1] For directions for making and using this stain see Mallory and Wright, *Pathological Technique*, 3d edition, 1904, Philadelphia, W. B. Saunders & Co., p. 370 *et seq.* This stain can be bought ready for use from dealers in laboratory supplies.

[2] Noguchi. Proc. of the Soc. for Exper. Biol. and Med., Vol. VI, p. 51, 1909. — Noguchi and Moore. Journ. of Exper. Med., Vol. XI, p. 604, 1909. — Rosanoff and Wiseman. Am. Journ. of Ins., Vol. LXVI, No. 3, p. 419, 1910.

Ross-Jones test.[1] — Upon 2 c.c. of a saturated solution of ammonium sulphate in a test tube 1 c.c. of the cerebrospinal fluid is allowed to flow gently from a pipette in such a manner that it will form a layer floating on top. The reaction is positive if within a few minutes a thin grayish ring is formed at the junction of the two liquids. After standing the ring becomes thicker and on close examination in a suitable light against a dark background it may be seen to be made up of a fine network of cobweb-like appearance.

If in a case in which general paresis is suspected a lumbar puncture gives negative results it is advisable to repeat the operation and examine the fluid again after an interval of ten days. Negative results obtained twice from both the microscopical and chemical examinations exclude general paresis.

On the other hand, positive findings do not in themselves establish the diagnosis of general paresis, as there are other conditions which may give them: cerebral syphilis, tubercular meningitis, multiple sclerosis, etc. The laboratory findings must be interpreted in the light of the clinical data.

PATHOLOGICAL ANATOMY. — ETIOLOGY. — TREATMENT.

We shall describe separately the lesions of the encephalon, of the spinal cord, of the peripheral nerves, and of the viscera.

Pathological Anatomy. — A. **Encephalon.** — *Dura mater:* often congested, presenting occasionally the lesions of hemorrhagic pachymeningitis.

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[1] Brit. Med. Journ., 1909, Vol. I, p. 1111.

Pia-arachnoid and brain.

(*a*) Macroscopic lesions.

(1) *General atrophy of the brain,* most marked in the frontal and parietal lobes, and made evident by:

α. Flattening of the convolutions;

β. Thinning of the cortex;

γ. Diminution of the weight, most marked in cases of slow evolution, often very slight or even absent in cases of general paresis of a very rapid course.

(2) *Thickening of the pia mater and adhesions between it and the cerebral substance:* stripping off the pia causes a tearing away of the cerebral substance, especially at the frontal and parietal lobes.

(3) *Arteritis of the large and medium-sized cerebral vessels:* this lesion is not a constant one.

[(4) *Ependymal granulations:* the lining of the ventricles is thickly studded with translucent granulations, which are sometimes very minute, like a fine powder sprinkled over the surface, but more often coarser, resembling grains of granulated sugar. Ependymal granulations are fairly constant in paresis; outside of paresis they are found only exceptionally.]

(*b*) Microscopic lesions.[1]

(1) *Nerve cells.* — Their changes are:

α. In *numbers* and *arrangement:* many cells disappear; the different layers are more difficult to distinguish than in the normal state and appear to be confounded;

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[1] Ballet. *Les lésions cérébrales de la paralysie générale.* Ann. méd. psych., 1898. — Anglade. *Sur les altérations des cellules nerveuses dans la paralysie générale.* Ann. méd. psych., July-Aug., 1898.

β. In *shape:* the processes disappear, the angles become blunted, the cell-body tends to reduce itself to a small, granular and pigmented mass;

γ. In *structure:* chromatolysis — that is, alteration and destruction of Nissl's corpuscles — which causes the cell to assume a hyaline aspect when the chromatic substance is destroyed, or to present a uniform coloration if stained by the aniline pigments when this substance, reduced to a fine powder, is disseminated through the entire cell.

(2) *Nerve-fibers:* many are destroyed, which fact can be demonstrated by Pal's or Weigert's hæmatoxylin stain. The degeneration affects projection fibers as well as association fibers, but more particularly the superficial tangential fibers of Exner-Tuczek.

(3) *Pia mater and blood-vessels:*

α. The *pia mater is thickened,* infiltrated by nuclei representing proliferating fixed connective-tissue cells or migrating leucocytes.

β. The *blood-vessels* are much more numerous than normally; the walls are thickened, often showing hyaline or fatty degeneration; the perivascular spaces are infiltrated with cells. The appearance of these lesions is similar to those of diffuse cerebral syphilis.[1]

[Among the cells infiltrating the pia-arachnoid and the adventitial coats of the cortical vessels a special variety of cells occurs, known as *plasma cells,* which are of great importance in pathological diagnosis, since they are absolutely constant in general paresis and are

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[1] Mahaim. *De l'importance des lésions vasculaires,* etc. Bullet. de l'Acad. roy. de Méd. de Belgique, July, 1901.

found, according to Nissl, in no other chronic psychosis. These cells are somewhat larger than the ordinary round cells, contain coarse, deeply stained granulations in their nuclei, and a relatively large amount of finely granular protoplasm which, in specimens fixed in alcohol and stained with toluidin blue, takes a deep purple stain.]

(4) *Neuroglia.* — Proliferation of neuroglia-cells is very frequently seen; when well marked it is especially prominent in the vicinity of the blood-vessels (Mahaim). Scantily distributed here and there may be seen spider-cells of abnormal shape and even of gigantic size.

[Among the most constant neuroglial changes must be mentioned the ependymal granulations already referred to above. These are found under the microscope to consist of irregular hillocks upon the lining of the ventricles, formed by great proliferation of the ependymal glia cells which, instead of consisting of a single layer, as they do normally, are in these hillocks piled up in half a dozen or more irregular layers.]

Which of the above lesions are primary? There are two current opinions, as follows:

Some (Joffroy, Binswanger) believe that the lesions begin in the tissues of higher development, — the nerve cells and fibers; the proliferation of neuroglia, the increase in the number of blood-vessels, and the changes in their walls are secondary.

Others (Magnan, Mendel, Fournier) are of the opinion that the lesions in the blood-vessels are primary and those of the higher tissue-elements secondary. Ballet, though adhering to this opinion, does not deny that in some cases of rapid evolution the changes in the nerve-cells may be primary.

(B) **Spinal cord.** — (1) *Nerve cells:* degenerative and atrophic lesions identical with those of the cerebral cells.

(2) *Nerve-fibers.* — There are two principal types of lesions, — the tabetic type and the type of combined sclerosis.

(*a*) *Tabetic type.* — The degenération is localized in the posterior columns and is similar to the lesion of tabes; this has led many authors to look upon general paresis and tabes as two different localizations of the same morbid process.[1]

An examination of many sections, however, shows that the lesions of the posterior columns are not strictly systemic, as they are in tabes. According to Rabaud [2] they are characterized in general paresis:

"α. By their irregularity, which is seen from an examination of sections from different levels of the cord;

"β. By their diffuseness, apparent in a single section of the cord;

"γ. By the frequent coexistence of spinal sclerosis with an intact condition of the roots and of the zones of Lissauer."

It seems, then, that one is justified in looking upon general paresis and tabes as two distinct affections which are sometimes, though rarely, associated in the same subject.[3]

(*b*) *Combined sclerosis.* — The degeneration involves both the posterior and the lateral columns. Moreover,

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[1] Nageotte. *Tabes et Paralysie générale.* Thèse de Paris, 1893.

[2] Rabaud. *Contribution à l'étude des lésions spinales posterieures dans la paralysie générale.* Thèse de Paris, 1898, p. 105.

[3] Joffroy. *De la paralysie générale à forme tabétique.* Nouvelle iconographie de la Salpêtrière, 1895.

the process here is more diffuse and affects simultaneously different systems of fibers (tract of Gowers, crossed pyramidal tract).

(C) **Peripheral nerves.** — The lesions of the peripheral nerves consist in the phenomena of neuritis and atrophy, analogous to those encountered in tabes and in alcoholism.

(D) **Viscera.** — Three classes of lesions may be distinguished in the viscera:

(1) Lesions occurring merely as accidental complications: various infections, broncho-pneumonia, tuberculosis. The latter is rare and usually runs a slow course.

(2) Lesions which are the direct consequences of the nervous disorders. These have been studied exhaustively by Klippel, who has termed them vaso-paralytic lesions. They consist, according to this author, "in a high degree of congestion and capillary engorgement, capillary hemorrhages, and, by consequence, atrophic degeneration of epithelial tissues." [1]

(3) Diffuse vascular lesions identical in appearance and probably also in their nature and origin with those of the cerebral vessels. Angiolella attributes them to the action of a toxic substance. We shall see their pathological importance later on.

These lesions are met with chiefly in the kidneys, liver, and heart, and are often associated with degenerative lesions, such as fatty or cirrhotic liver, sclerotic kidney, or degenerated myocardium.

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[1] Klippel. *Lésions des poumons, du cœur, du foie et des reins dans la paralysie générale.* Arch. de méd. expérim. et d'anat. path., July, 1892. — Angiolella. *Lésions des petits vaisseaux de quelques organes dans la paralysie générale.* Il manicomio, 1895, Nos. 2 and 3.

Etiology. — The etiology of general paresis has been one of the most arduously discussed subjects in psychiatry. The labors of recent years have contributed much towards its solution.

(A) **Predisposing causes.** — *Sex.* — Men are much more exposed than women [1] to general paresis, although the difference is not so great as was generally believed some years ago; this difference varies in different communities. Exceptional in women in the country, general paresis occurs in the proportion of one case in women to four in men in the large cities (Paris, Berlin, Hamburg).

The menopause and the puerperal state seem to favor its appearance.

It often presents a peculiar aspect in women. The demented and the depressed forms predominate. Delusions when present are usually childish. The patient is proud of her looks, of her dress, etc.

Age. — Rare before thirty years, general paresis is, however, met with in youth and even in childhood, constituting the *juvenile* and *infantile* forms.

Etiologically these cases usually present a syphilitic heredity. Clinically juvenile or infantile general paresis is characterized by an accentuation of the physical signs and by absence of delusions.[2]

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[1] Crété. *Quelques observations sur la paralysie générale de la femme et la paralysie générale conjugale.* Thèse de Paris, 1899.

[2] Toulouse. *La paralysie générale juvénile.* Gazette des hôpitaux, 1898. — Régis. *Arch. clin. de Bordeaux,* July and August, 1892. — Joffroy. *Revue de Psychiatrie,* 1898. — Thiry. — *Paralysie générale juvénile.* Thèse de Nancy, 1898. — Durpas et Marchand. Ann. méd. psych., 1901. — Mott. *Notes of Twenty-two Cases of Juvenile General Paralysis,* Arch. of Neurology, 1899. — Legrain. *Contribution à l'étude de la paralysie générale chez l'adolescent.* Ann. de la policlin. de Paris, 1893.

General paresis scarcely ever begins after the age of sixty years. Possibly, however, some cases, rather carelessly classified as senile dementia, are in reality cases of general paresis of late onset.

Social factors. — General paresis is not, as was once believed, the sad privilege of cultured men. It affects the working classes as well as the upper classes.

It is much more common in urban than in rural communities, probably because syphilis, alcoholism, and stress, the influence of which will be studied later, are more frequent in the cities.

Certain occupations are supposed to predispose to general paresis. It is claimed in particular that this disease is especially common among military men [1] and among railroad employees.[2]

Individual predisposition. — Entertained formerly by Mattern, Mackenzie, and Bakon, and in our own times by Scholten, the opinion that general paresis is an accidental affection which may occur in an individual free from all predisposition has to-day scarcely any adherents.

The predisposition, now generally admitted, is most frequently hereditary. Some are of the opinion that the hereditary factor is usually an *organic* disease in the ascendants: apoplexy, tabes, etc. Ball and Régis have studied the genealogies of one hundred general paretics and found in their families but four insane individuals, while the number of those afflicted with organic nervous diseases mounted to one hundred and forty-three.

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[1] Kræpelin. *Psychiatrie.* 7th edition, 1904.

[2] Hoppe. *Beitrag zur Kenntniss der progressiven Paralyse.* Allg. Zeitsch. f. Psychiat., Vol. 58, No. 6.

Another opinion, which I believe has wider acceptance, is that general paresis may occur in individuals coming from neuropathic families in the members of which may be encountered organic nervous affections as well as functional neuroses and psychoses. This view is held by Joffroy in France, Funaïoli in Italy, and Näcke in Germany, who have arrived at the same conclusion by different methods.

Acquired predisposition is usually the result of overwork, chronic intoxications, etc. Cases in which no hereditary influence can be found belong to this category.[1]

The predisposition is often latent, so that the future general paretic may appear perfectly normal. Sometimes, however, meningo-encephalitis attacks manifest degenerates (Joffroy) and even imbeciles (Cullerre).[2]

(B) **Exciting causes.** — The most important are violent or prolonged emotions, overwork, cranial traumatisms, alcoholism, and syphilis. These are not, however, of equal importance. Alcoholism and syphilis are in this respect much more prominent than the rest.

Emotions. — In the histories of general paretics we often find grief, financial losses, and sudden fright as

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[1] Joffroy. Congrès des médecins aliénistes et neurologistes, Angers, 1898. — Funaïoli, quoted by Mariani. *L'hérédité chez les paralytiques généraux.* Thèse de Paris, 1899. — Näcke. *Die sogenannten äusseren Dégenerationszeichen bei progressive Paralyse.* Allg. Zeits. f. Psych., 1899. — Wahl. *Étude sur la descendance des paralytiques généraux.* Thèse de Paris, 1898. — Rogues de Fursac. *Les stigmates physiques de dégénérescence chez les paralytiques généraux.* Thèse de Paris, 1899.

[2] Joffroy. *Loc. cit.* — Cullerre. *Paralysie générale chez un imbécile.*

causes. A servant-woman, forty years of age, having had her clothing torn by a shell during the siege of Strasburg, soon after showed signs of mental derangement, and five years later was admitted to a hospital with unmistakable signs of general paresis.[1]

Overwork. — Either physical or intellectual overwork is a frequent cause. In many observations deprivation of sleep has been found.

All kinds of excesses, especially venereal excesses, when they are not due to the disease itself, act through the general impairment of health which they bring about.

Cranial traumatisms. — Their influence as etiological factors, though denied by some authors, Hirschl among them, is however admitted by most. Sometimes the phenomena of paresis appear soon after the injury; in most cases, however, they appear after an interval of varying duration.[2]

Alcoholism. — Bayle long ago pointed out the importance of alcohol in the causation of general paresis. Calmeil and Marcé also recognized it. Among the modern authors who consider alcoholism as a prominent etiological factor in general paresis may be mentioned Joffroy, Magnan, Dagonet, Garnier, Mendel.[3] "General paresis occurs frequently as a result of the abuse of alcohol in predisposed individuals" (Joffroy). "The

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[1] Mendel. *Loc. cit.*, p. 255.

[2] Vallon. *De la paralysie générale et du traumatisme.* Thèse de Paris, 1879. — Meschede. *Paralytische Geistesstörungen nach Trauma.* Allg. Zeitsch. für Psychiat., 1899.

[3] Joffroy. Gaz. des hôpitaux, 1895. — Mendel. *Loc. cit.* — Garnier. Progrès médic., 1889. — Hoppe. *Allg. Zeitsch. f. Psychiat.* I, 58, No. 6. — Funaïoli. *Sulle cause e sulla profilassi della pazzia,* 1900.

abuse of alcohol is undoubtedly a frequent cause of general paresis" (Mendel).

Some authors, however, do not look upon alcoholism as any more than a predisposing cause. But whatever be its mode of action it constitutes a causative agent of primary importance. Numerous statistics substantiate this; as being among the most recent and the most conclusive may be mentioned those of Hoppe and of Funaïoli.

Syphilis. — We have now come to the most important and, it seems now, the essential cause, *sine qua non*, of diffuse meningo-encephalitis.

In 1857 Esmarch and Jessen came to the conclusion that syphilis is the cause of general paresis. Disputed at first, this view soon found acceptance in many countries, especially in Germany. In France it gained ground more slowly. Charcot always rejected it. Déjerine wrote in 1886: "Syphilis is very rarely found in the histories of general paretics, and has no influence upon the course of the affection. *When found, it is but a coincidence.*"

However, statistics of various authors have furnished such unmistakable and uniform figures that, with a few rare exceptions, all authors to-day consider syphilis as a factor of high importance in the causation of general paresis.[1]

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[1] Régis. *Syphilis et paralysie générale.* Arch. clin. de Bordeaux, July and August, 1892. — Fournier. *Des affections parasyphilitiques*, Paris, 1894. — Ballet. *Loc. cit.* — Sprengeler. *Beitrag zur Statistik*, etc., *der allgemeinen progressiven Paralyse.* Allg. Zeitsch. f. Psychiat. — Fournier. *Rapport de la syphilis et de la paralysie générale.* Arch. gén. de Méd., Dec., 1894.

But is syphilis the *essential* and *specific* cause of the affection? On this point opinions are still divergent.

Some claim, like Fournier, that general paresis is a disease of syphilitic origin, a parasyphilitic affection; others believe, with Joffroy, that syphilis is but an adjuvant — a powerful one, it is true — which favors the occurrence of the disease but does not alone suffice to produce it.

The limits of this work do not permit of a detailed exposition of the arguments advanced in favor of each opinion.

The uselessness of specific treatment in most of the cases of general paresis does not prove that the disease is not of syphilitic origin: are there not lesions, especially of the cord, the syphilitic origin of which is doubted by no one, but which are not in the least influenced by the most thorough specific treatment?

For a long time the adversaries of the syphilitic origin of the disease have offered the so-called anatomic-pathological proof. They argued that syphilis occasions circumscribed lesions, while the lesions of general paresis are diffuse. Ballet has shown the unsoundness of this argument:

(1) It constitutes a mere *petitio principii*, for there is nothing to prove that we already know all the lesions of syphilis.

(2) There *are* diffuse syphilitic myelites, and consequently there is nothing against the existence of a diffuse meningo-encephalitis, that is to say, syphilitic general paresis.

(3) The vascular lesions of general paresis are identical with those encountered in certain syphilitic affec-

tions of the viscera (liver, kidneys), and even in syphilitic cerebral lesions (Mahaim).

Thus the anatomic-pathological proof falls of itself.

Does the comparative pathology of races clear up this point? It is certain that syphilis is common and that general paresis is rare among the Arabs, Abyssinians, and South Africans, as was shown by Ballet; but this proves nothing at all. It is quite possible that syphilis cannot produce the lesions of chronic meningo-encephalitis except under certain conditions created by civilization and absent among primitive and low races. The partisans of the syphilitic origin do not deny the necessity of a predisposition.

Krafft-Ebing presented at the International Congress of Medicine at Moscow in 1897 results of experiments constituting an incontrovertible argument in proof of the syphilitic origin, although the experiments were made upon a limited number of subjects. A physician, whose name is not mentioned, inoculated with syphilis nine general paretics who had reached the last stage of the disease and in whose history syphilis was not to be found; not one of these developed the indurated chancre. This experiment repeated upon a large number of patients could afford a solution of this great problem. For obvious reasons probably very few will ever be tempted to undertake this work.

[Practically conclusive evidence of the relation between syphilis and general paresis is afforded by the application of the Wassermann reaction. This reaction, as is well known, is dependent upon the power of the serum of a syphilitic patient to inhibit hæmolysis through absorption of complement in the

presence of syphilitic antigen. (For technique see Appendix.)

The results of recent researches[1] have shown that a positive Wassermann reaction is given in cases of general paresis either by the blood serum, or by the cerebro-spinal fluid, or by both, as often as in cases of active syphilis. It seems, therefore, that any doubt of the essential dependence of general paresis upon syphilitic infection can no longer be entertained.

The intimate nature of the disease is still unknown. Two theories have been advanced.

According to one theory general paresis is but a late manifestation of still active syphilis (Plaut and Fischer, Browning and McKenzie). Against this theory are the following facts: (1) general paresis does not yield to antisyphilitic treatment; (2) the organism of syphilis, the *Spirochæte pallida*, though found in all lesions of syphilis is not found in the lesions of general paresis.

According to the other theory (Kraepelin) general paresis is a disease of autointoxication: syphilis produces a disorder of metabolism which results in the formation of a toxic substance which, in its turn, causes the lesions and symptoms of paresis.

What may be the nature and origin of this toxic substance? Why do only three or four per cent of all cases of syphilis ultimately develop general paresis, while the

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[1] Wassermann and Plaut. Deut. med. Wochenschr., 1906, Vol. XXXII, p. 1769. — Marie, Levaditi, and Yamanouchi. C. R. Soc. Biol., 1908, Vol. LXIV, p. 169. — Stertz. Allg. Zeitschr. f. Psychiat. u. psych.-gerichtl. Med., 1908, Vol. LXV, p. 565. — Smith and Candler. Brit. Med. Journ., 1909, Vol. II, p. 199. — Rosanoff and Wiseman. Amer. Journ. of Ins., 1910, Vol. LXVI, p. 419.

rest escape it? Neither virulence of infection nor neglect of treatment seems to be responsible for the development of general paresis; for many cases of syphilis remaining for years untreated and characterized by extensive and destructive syphilitic lesions never develop general paresis, while other cases of slight infection, promptly and vigorously treated, later nevertheless develop the disease. It would seem, then, that we are dealing here not with a specially severe or modified infection but with a special reaction to it.

A close study of the course of the syphilitic infection, as found in histories of cases of general paresis, and of the post-mortem findings in such cases reveals certain facts which would seem to indicate that syphilitic antibody, produced in excessive amounts, may be the toxic body which according to Kraepelin's hypothesis is the cause of general paresis.

In the first place must be mentioned the comparative infrequency of secondary and especially of tertiary lesions (iritis, skin eruptions, gummata) in histories of cases of tabes or paresis.[1] In the second place must be mentioned the almost invariable absence of any of the lesions ordinarily found in cases of old syphilis: endarteritis, arteriosclerosis, valvular heart lesions, aneurisms, infarctions, hepatic cirrhosis, etc.

It may be assumed that the manifestations of a

[1] E. F. Snydacker. *Absence of Iritis and Choroiditis among Syphilitics who have become Tabetic.* Journ. Amer. Med. Ass'n. 1910. — Wernicke. *Tabes und Syphilis.* Centralbl. f. Augenheilkunde, March, 1908. — Wintersteiner. *Augenspiegel-Untersuchung bei 1000 Geisteskranken.* Wiener klin. Wochenschr., 1907. — G. Peritz. *Ueber das Verhältniss von Lues, Tabes, und Paralyse zum Lecithin.* Zeitschr. f. exper. Pathol. u. Ther., Vol. V, p. 607.

syphilitic infection as well as the chance of ultimate development of general paresis is dependent not only upon the severity of infection and adequateness of treatment, but also in a large measure upon the reaction to the infection, which may be expected to differ widely in different individuals, as is well known to be the case in other infections.

The assumption that syphilitic antibody is the specific morbid agent of general paresis would account, on the one hand, for the positive Wassermann reaction, and on the other hand, for the changes in the various organs as resulting from the special affinity which this antibody is known to have for certain tissue lipoids.]

Treatment. — This is but symptomatic. As is admitted by all, specific treatment exercises absolutely no favorable influence upon the course of the disease. If the hypothesis of Kraepelin is correct, this fact is not surprising; when the first symptoms of general paresis appear, syphilis has already accomplished its work, and it is too late for combating it.

Rest and avoidance of all excitement and fatigue are the only means at our disposal for retarding to some extent the course of the disease.

Excitement, insomnia, refusal of food, involuntary evacuation of urine and fæces, and the other symptoms are to be treated by the usual methods.

By special care with regard to the cleanliness of the patient, by allowing him to remain out of bed for several hours each day, or by frequently changing his position in bed, by the use of air- or water-beds, and by promptly attending to beginning ulcerations, using an antiseptic and tonic lotion, it is quite possible to avoid bed-sores,

to heal them, or at least to retard the progressive ulceration.

Enemata, leeches to the mastoid processes, sinapisms to the lower extremities, and topical blood-letting constitute the classical and perhaps efficacious treatment for the seizures. Continued convulsions are sometimes successfully combated by rectal injections of chloral or by inhalations of chloroform.

CHAPTER X.

MENTAL DISORDERS DUE TO ORGANIC CEREBRAL AFFECTIONS.

ALL the so-called organic cerebral affections, whether diffused or localized, have an influence upon the psychic functions.

Among the most important may be mentioned [tumors, multiple sclerosis, brain abscess, central neuritis, cerebral syphilis, traumatic lesions, and cerebral arteriosclerosis.

Tumors, when small and of slow growth, may give rise to no mental symptoms.] In other cases the mental state presents certain peculiarities which may aid in the diagnosis: Dupré and Devaux [1] have found that "patients suffering from cerebral tumor present a peculiar state of mental depression and enfeeblement, which constitutes their dominant psychopathic note: this state is one of torpor, *psychic dullness*, and *clouding of the intellect*, to which may be added mental *puerilism*." Properly speaking these cases present no true dementia until the affection has reached its terminal period. According to the same authors [2] "the intelligence, though clouded, is, however, not destroyed. It responds to strong stimuli, to imperious injunctions; it is veiled, but nevertheless present, and not until the last phases

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[1] *Nouvelle iconographie de la Salpêtrière. Tumeur cérébrale.* 1901, Nos. 2 and 3, p. 51.

[2] *Loc. cit.*, p. 8.

of the development of the affection does it decline and finally disappear."

[The *diagnosis* of brain tumor is based chiefly on the neurological symptoms; these are usually classified into *general symptoms*, common to all tumors and resulting from increase of intracranial pressure, — severe and persistent headache, slow pulse, vertigo, vomiting, and gradual impairment of vision due to optic neuritis, — and *focal symptoms*, varying with the location of the tumor, — Jacksonian epilepsy, monoplegia, hemiplegia, aphasia, apraxia, hemianopsia, oculo-motor paralysis, etc.

The differentiation between brain tumor and general paresis may present considerable difficulty, the more so in view of the fact that in the case of tumors involving the meninges the cerebro-spinal fluid, as in general paresis, may show an increase of cellular elements. The application of the Wassermann reaction may aid materially in the diagnosis.

Multiple sclerosis may be accompanied by a gradually progressive mental deterioration simulating that of general paresis. In such cases too the application of the Wassermann reaction may aid in the diagnosis.

Brain abscess occurs chiefly as a complication of chronic purulent otitis media. The *symptoms* are slow pulse, localized headache, fever of the asthenic type, often subnormal temperature; mentally there are dullness, confusion, restlessness, and in severe cases coma. The abscess is generally located either in the temporal lobe — when amnesic aphasia is a prominent symptom if the lesion is on the left side — or in the cerebellar hemisphere — causing vomiting, vertigo, and staggering gait. The *diagnosis* rests upon a history of chronic

otitis media, the symptoms here enumerated, and a microscopical examination of the blood which generally reveals leucocytosis; an exploratory operation may be necessary and should be done early in every case in which this condition is suspected.

Central neuritis. Cases of this highly interesting though rather rare condition have been reported by Wiglesworth,[1] Meyer,[2] Worcester,[3] Turner,[4] Cotton and Southard,[5] Somers and Lambert,[6] and others. The first systematic clinical and anatomical study was made by Meyer.[7]

Although clinically this condition is not very well defined and varies a good deal in its aspect, the anatomical changes found *post mortem* are highly characteristic and constitute the basis of its autonomy.

These changes are revealed only on microscopic examination and consist in widespread parenchymatous degeneration of the central nervous system unaccompanied by any inflammatory reaction. Large nerve

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[1] J. Wiglesworth. *On the Pathology of Certain Cases of Melancholia Attonita, or Acute Dementia.* Journ. of Ment. Sc., Oct., 1883.

[2] Adolf Meyer. *Demonstrations of Various Types of Changes in the Giant Cells of the Paracentral Lobules.* Amer. Journ. of Ins., Oct., 1897.

[3] W. L. Worcester. *A Case of Landry's Paralysis.* Journ. of Nerv. and Ment. Dis., 1897.

[4] John Turner. *Note on a Form of Dementia Associated with a Definite Change in the Appearance of the Pyramidal and Giant-Cells of the Brain.* Brain, 1899.

[5] H. A. Cotton and E. E. Southard. *A Case of Central Neuritis with Autopsy.* Trans. of the Amer. Med.-Psychol. Ass'n, 1908.

[6] E. M. Somers and C. I. Lambert. *Central Neuritis.* State Hosp. Bulletin, December, 1908.

[7] Adolf Meyer. *On Parenchymatous Systemic Degenerations Mainly in the Central Nervous System.* Brain, 1901.

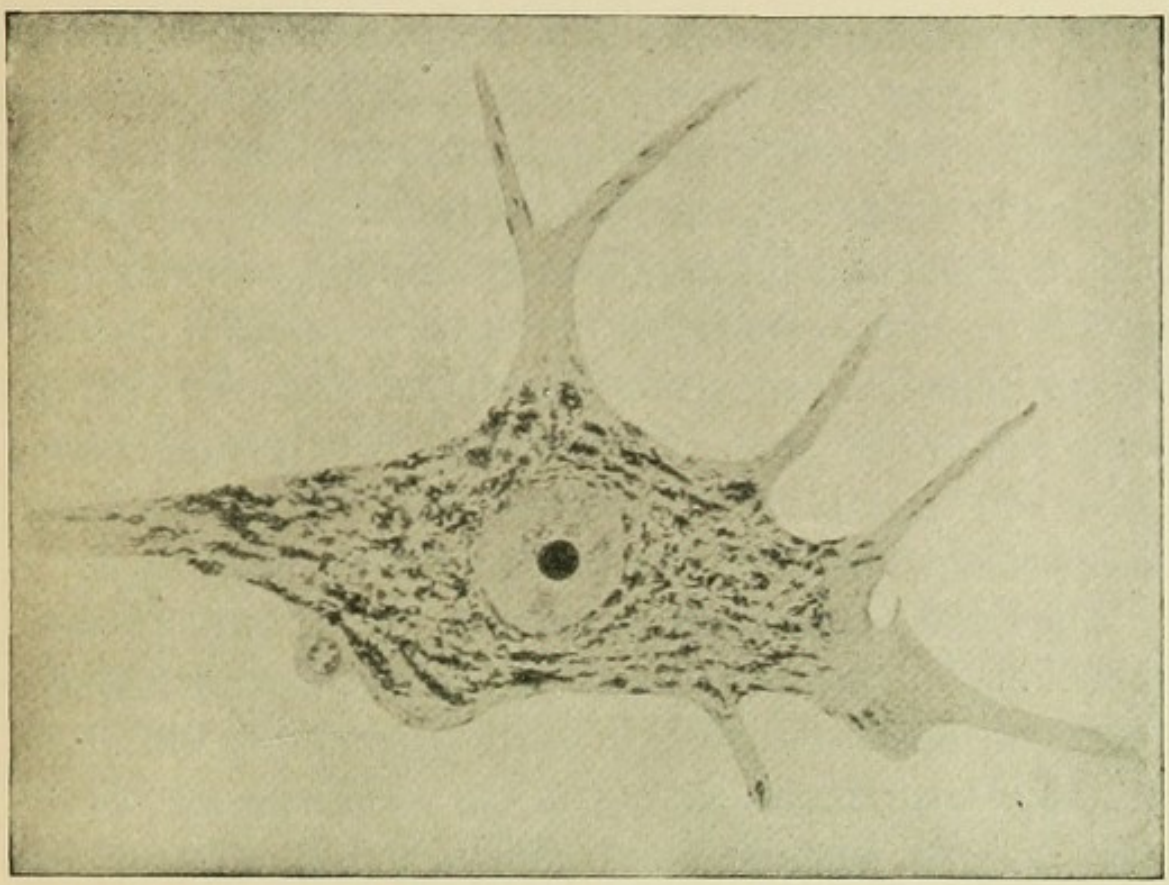


FIG. 1. NORMAL BETZ CELL. (After Adolf Meyer.)

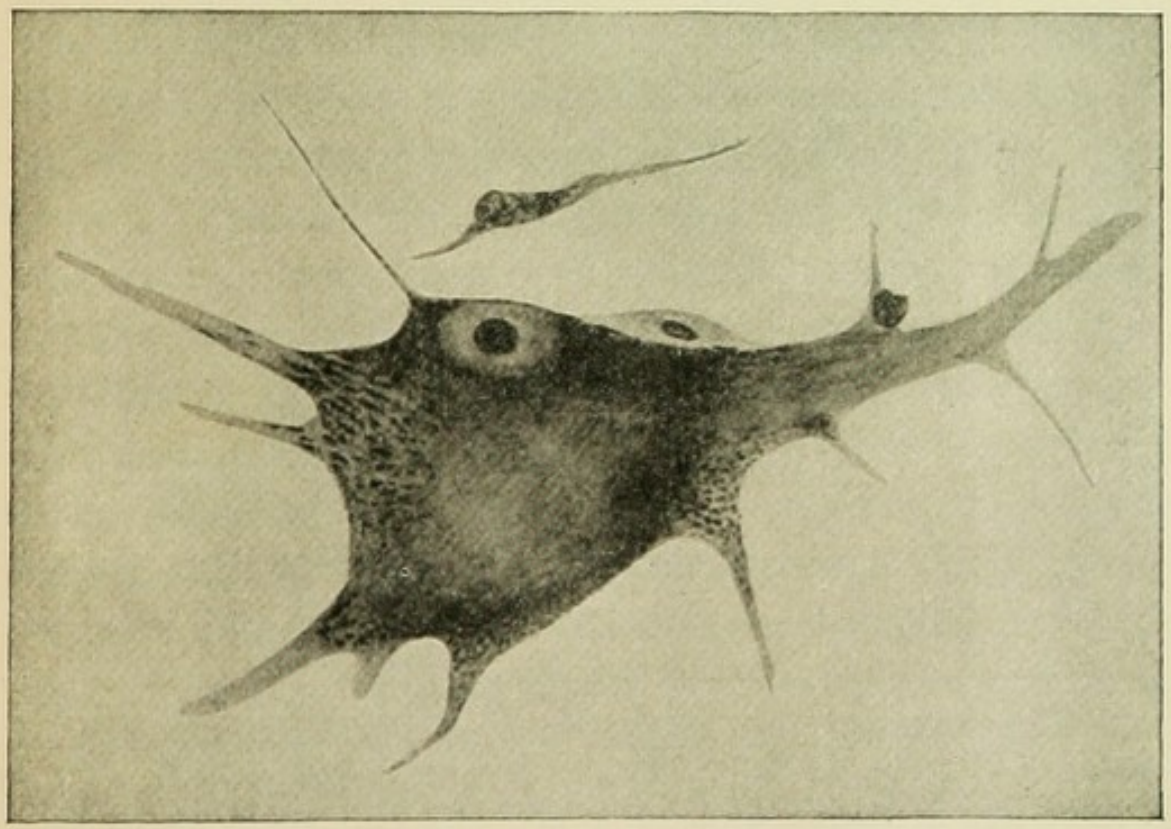


FIG. 2. CELL FROM A CASE OF CENTRAL NEURITIS, SHOWING AXONAL ALTERATION. (After Adolf Meyer.)

cells, especially those in the motor area of the cortex in both cerebral hemispheres, present the so-called axonal alteration: the cell body is somewhat swollen; the stainable substance, especially in the central part of the cell, is converted into a diffusely staining, structureless, or into a finely powdered, mass; the nucleus is pushed toward the periphery of the cell and may be slightly flattened or distorted. Marchi preparations reveal corresponding degeneration of fiber tracts, particularly those connected with the motor cortical areas.

The *nature* of central neuritis is not understood, and but little is known of its *etiology*. Most cases that have been reported occurred in asylum practice either as terminal episodes in some chronic psychoses or in connection with acute mental confusion. It affects both sexes, chiefly in the fifth and sixth decades of life or thereabouts. *Heredity* seems to be a very prominent factor: of twenty-four reported cases[1] a family history of insanity was found in twelve, of paralytic stroke in two, and of alcoholism in one; only in two cases was the family history given as negative, the data in the remaining seven not having been ascertained. It is also noteworthy that a large proportion of the cases occurred in persons of neuropathic make-up: either actual defectives or subjects of abnormal disposition, eccentric habits, etc. In most of the cases no exciting cause is assigned; in a considerable number the trouble is said to have followed an attack of influenza, and in three

[1] Eight cases of Adolf Meyer, one of August Hoch, one of W. L. Worcester, seven of John Turner, two of J. Wiglesworth, one of Cotton and Southard, three of Somers and Lambert, and one case, not published, observed by D. L. Ross and J. I. Wiseman.

cases it followed slight surgical operations done under general anæsthesia.

The *mental symptoms*, given in the order of their frequency, are: depression with anxiety or sudden apprehensiveness; restlessness and agitation; perplexity, confusion; hypochondriacal or persecutory delusions, often of an extremely absurd character; hallucinations. Refusal of food has occurred in more than half of the cases, and suicidal tendency is almost as common.

Among the *physical symptoms* the most striking are: stumbling, falling, unsteady gait; peculiar seizures, — faintness, violent shaking, rigidity; muscular twitchings, irregular jerky movements, jactations; maladjustment in all movements; the knee-jerks are most frequently exaggerated, but in some cases they are diminished or even absent; the speech is apt to become very indistinct; toward the last, dysphagia; in some cases there is little or no reaction to pin-pricks. The general constitutional disturbance is grave: there is usually emaciation which may be extreme; diarrhœa has been observed in nearly three-fourths of the cases; a slight, irregular febrile reaction appears, the patient becomes exhausted, falls into stupor, and dies; in some cases death follows a sudden turn for the worse or actual collapse.

Cerebral syphilis occurs chiefly in three forms: *diffuse basal meningitis*, one or more large *gummata*, and *arteritis*. General paresis is often closely simulated. Cerebral syphilis may be recognized by its rather rapid onset, — complete development of symptoms in two or three weeks, — marked mental dullness, confusion, or even stupor, often the cardinal symptoms of brain tumor, and evidences of cranial nerve involve-

ment, particularly ptosis, external strabismus, and blindness.

Lumbar puncture is not of much assistance in the diagnosis between general paresis and cerebral syphilis, for in both conditions there is generally lymphocytosis and the ordinary chemical tests give positive reactions. The Wassermann reaction is said to be given less often by the blood serum and more often by the cerebro-spinal fluid in general paresis than in cerebral syphilis.[1] Yet in either condition both the blood serum and the cerebro-spinal fluid may give a positive reaction. Whenever any uncertainty exists as to the diagnosis the patient should be promptly submitted to a thorough course of antisyphilitic treatment; cerebral syphilis is apt to show quick improvement or even recovery under such treatment, while general paresis remains unimproved.

Traumatic lesions. — It has already been stated that cranial traumatisms may play an important rôle in connection with other causes in the etiology of many psychoses.[2] Such traumatisms may, however, produce mental disturbances independently of other causes, that is to say pure traumatic psychoses.

The immediate effect of a severe traumatism may be stupor or coma, or a dazed or delirious state lasting several days or weeks and terminating in recovery, with amnesia for the acute period of the illness (*traumatic delirium*). In some cases the amnesia may extend for a variable period preceding the traumatism, while in

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[1] F. W. Mott. *An Address on the Diagnosis of Syphilitic Diseases of the Nervous System.* Brit. Med. Journ., June 12, 1909.

[2] See page 31.

other cases there may be more or less pronounced permanent mental deterioration characterized by reduced capacity for work, a vague feeling of fear or anxiety, irritability or childish peevishness, imparied power of attention and concentration, and impaired retention with resulting forgetfulness and disorientation (*traumatic dementia*). Further there are observed in many cases disturbances of special or general sensibility, tremors, recurrent convulsions, paralyses, and other neurological symptoms depending upon the extent and location of the lesion.

Cerebral arteriosclerosis.[1] — Disease of the arteries of the brain is often found at autopsies in cases which have shown during life no mental or nervous disturbances. The occurrence of such disturbances is probably determined by a certain extent or degree of arterial disease. Arteriosclerotic brain disease is but a part of general arteriosclerosis, though not infrequently the process is found to be much more marked in the brain than elsewhere.

The *causes* of arteriosclerotic brain disease are those of arteriosclerosis in general. Syphilis is probably much more often the cause than is generally indicated by etiological statistics.

The *symptoms* vary widely in different cases, depending chiefly upon the vessel or system of vessels affected.

Fig. 3 is a diagram of the arterial supply of the

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[1] Binswanger. Berlin. klin. Wochenschr., 1894. — Alzheimer. Allg. Zeitschr. f. Psychiatrie, 1902. — Gowers. Manual of Diseases of the Nervous System. — Lambert. N. Y. State Hosp. Bulletin, Vol. I; also in 20th Ann. Report N. Y. State Commission in Lunacy, pp. 91 *et seq.*

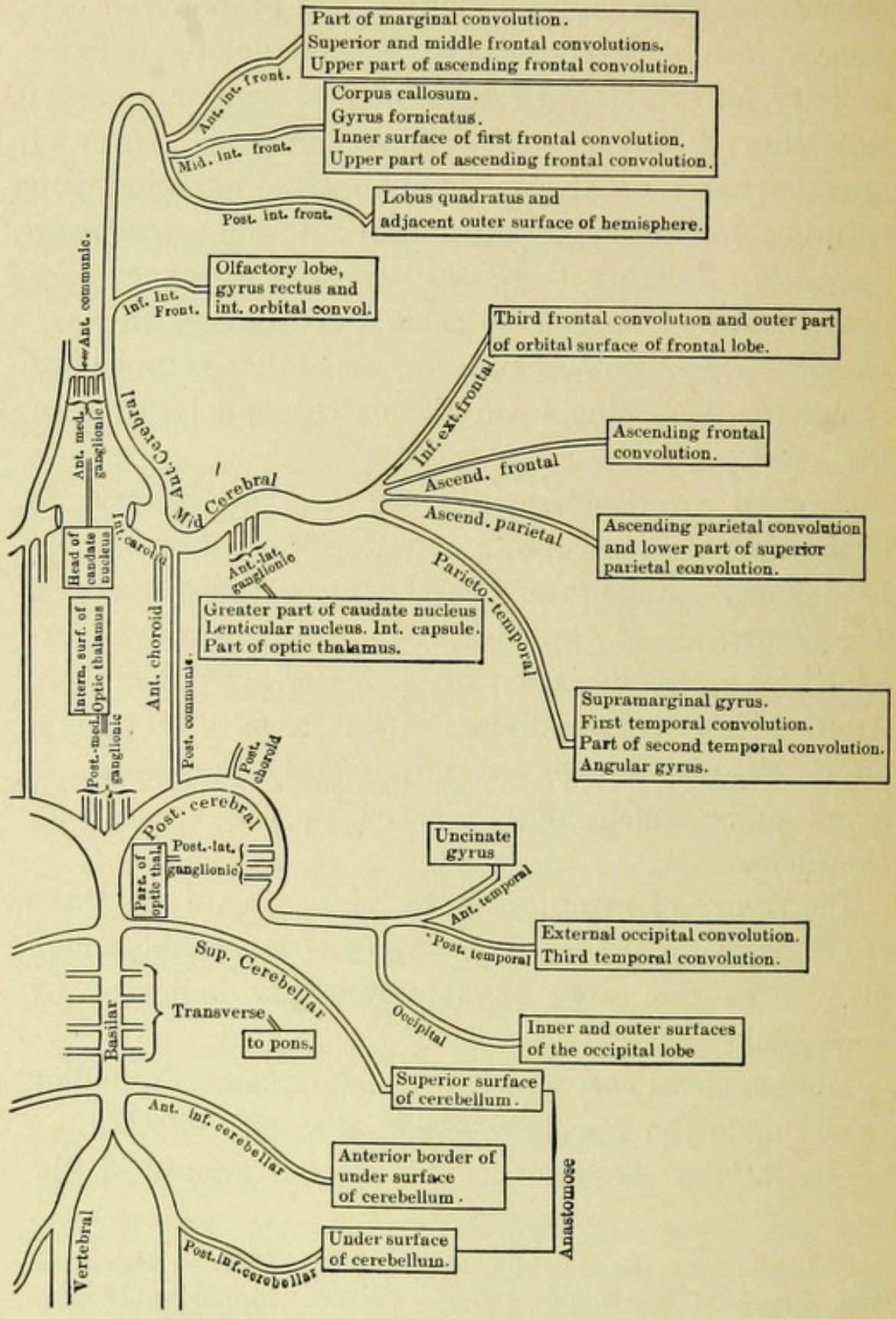

Part of marginal convolution.
Superior and middle frontal convolutions.
Upper part of ascending frontal convolution.
Ant. int. front.
Corpus callosum.
Gyrus fornicatus.
Inner surface of first frontal convolution.
Upper part of ascending frontal convolution.
Mid. int. front.
Lobus quadratus and
adjacent outer surface of hemisphere.
Post. int. front.
Olfactory lobe,
gyrus rectus and
int. orbital convol.
Inf. Int.
Front.
Ant. communic.
Third frontal convolution and outer part
of orbital surface of frontal lobe.
Inf. ext. frontal
Ascending frontal
convolution.
Ascend. frontal
Ant. Cerebral
Mid Cerebral
Ascend. parietal
Ascending parietal convolution
and lower part of superior
parietal convolution.
Ant. med. ganglionic
Head of caudate nucleus
Int. capsule
Ant. lat. ganglionic
Parieto-temporal
Greater part of caudate nucleus
Lenticular nucleus. Int. capsule.
Part of optic thalamus.
Intern. surf. of Optic thalamus
Ant. choroid
Post. communic.
Supramarginal gyrus.
First temporal convolution.
Part of second temporal convolution.
Angular gyrus.
Post.-med. ganglionic
Post. choroid
Post. cerebral
Post.-lat. ganglionic
Part of optic thal.
Uncinate
gyrus
Ant. temporal
Post. temporal
External occipital convolution.
Third temporal convolution.
Sup. Cerebellar
Basilar
Transverse
to pons.
Occipital
Inner and outer surfaces
of the occipital lobe
Superior surface
of cerebellum.
Ant. inf. cerebellar
Anterior border of
under surface
of cerebellum.
Anastomose
Vertebral
Post. inf. cerebellar
Under surface
of cerebellum.

FIG. 3.

brain showing the circle of Willis, its branches and their distribution.

The terminal arterioles form two distinct systems: a system of short vessels supplying the cortex, and a system of long vessels which penetrate deeper and supply the marrow; the ganglionic vessels at the base constitute a part of the medullary system. The manner of distribution of the terminal arterioles is shown in Fig. 4.

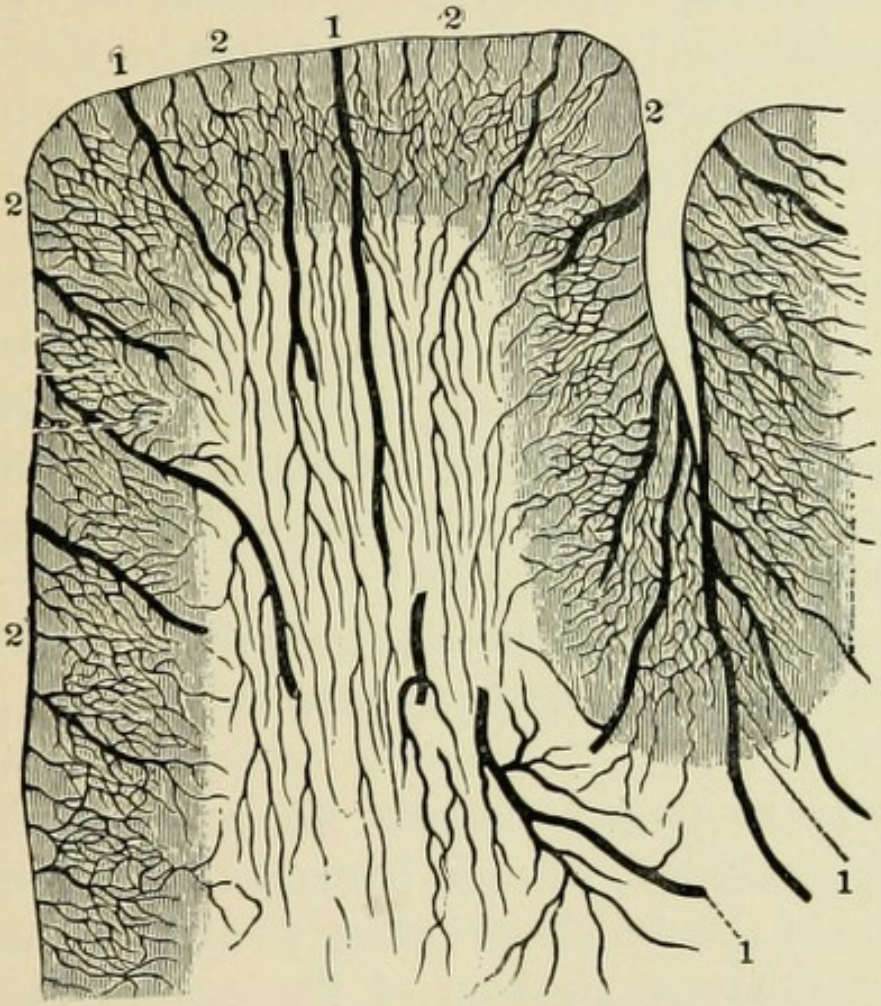


FIG. 4. (After Charcot, from Gray's Anatomy.) 1. LONG OR MEDULLARY ARTERIES. 2. SHORT OR CORTICAL ARTERIES.

Arteriosclerotic disease may affect chiefly the large vessels given off from the circle of Willis or their principal branches; or it may affect chiefly the terminal arterioles, either the cortical or the medullary system,

though the process is hardly ever sharply limited to any one system of vessels.

The manner in which the nervous tissues are affected is variable. Narrowing of the lumen of a vessel resulting from obliterative endarteritis brings about atrophy of the nervous elements, due to reduction of the blood supply, there being at the same time hypertrophy of the neuroglia tissue ("perivascular gliosis" of Alzheimer); thickening of the walls of the smallest arterioles and of the capillaries ("arterio-capillary fibrosis") results in atrophy through interference with osmotic processes; roughening of the intimal lining of the vessels results in the formation of thrombi or emboli with consequent infarction and softening; the brittle and weakened condition of the vessel walls and aneurismal dilatations combined with general rise of blood pressure result in rupture and hemorrhage with compression and destruction of nerve tissue to an extent depending upon the amount of extravasated blood.

The symptoms of arteriosclerotic brain disease may perhaps be most conveniently classified as follows: (1) systemic symptoms; (2) symptoms common to all forms of arteriosclerotic brain disease; (3) symptoms of occlusion of large vessels or their branches; (4) symptoms of affection of the medullary system of terminal arterioles; (5) symptoms of affection of the cortical system of terminal arterioles.

(1) *Systemic symptoms.* These will not be dwelt upon in detail here as they are more properly a subject of text-books of general medicine. As being among the most important may be mentioned: rigid and tortuous peripheral arteries, increased blood pressure, pulse high

in tension but small in volume, increased area of cardiac dullness, accentuation of the aortic sound, often evidences of chronic interstitial nephritis.

(2) *Symptoms common to all forms of arteriosclerotic brain disease.* (*a*) *Physical symptoms:* headaches, insomnia, muscular weakness, imperfect muscular control, attacks of faintness or dizziness, epileptiform or apoplectiform seizures. (*b*) *Mental symptoms:* diminished capacity for work, undue fatigability, emotional instability, states of depression or anxiety, drowsiness; later forgetfulness, disorientation, and general mental deterioration; a characteristic feature is the persistence of insight for a long time.

(3) *Symptoms of occlusion of large vessels or their branches.* The symptoms usually come on suddenly in the form of a stroke, often, but by no means always, accompanied by loss of consciousness lasting from a few minutes to several hours or even longer; this may be followed by a dazed, confused, or delirious period from which the patient recovers with permanent symptoms the character of which depends upon the location and extent of the lesion.

(*a*) Occlusion of the *anterior cerebral artery* is uncommon; the symptoms depend upon the point of occlusion and upon whether the main vessel or one of its branches is occluded; there may be no special symptoms, or there may be loss of the sense of smell on one side or crural monoplegia.

(*b*) Occlusion of the *middle cerebral artery* or of its branches is very common; the characteristic symptoms for the four branches respectively are: (α) motor aphasia; (β) facial or brachial paralysis, or both; (γ) as-

tereognosis; (*δ*) partial bilateral deafness, sensory aphasia, possibly lower quadrant hemianopsia. Lesions of the right hemisphere produce no aphasia in right-handed persons.

(*c*) Occlusion of the *posterior cerebral artery* has for its special symptom hemianopsia; this symptom, however, occurs only when either the main vessel or its occipital branch is affected.

(*d*) The *cerebellar arteries* communicate with each other by fairly free anastomosis; for that reason occlusion of one of them may cause but slight damage and give rise to no permanent symptoms; when the area of softening is extensive there are apt to be vomiting, vertigo, and muscular incoördination. In some cases the lesion involves parts of the pons and medulla, causing crossed hemianæsthesia, loss of the sense of taste, dysphagia, and aphonia, and rapidly leading to a fatal termination.

Occlusion of these vessels does not in itself as a rule cause marked general mental deterioration aside from that which is the characteristic accompaniment of states of aphasia.

(4) *Disease of the medullary system of terminal arterioles* ("chronic subcortical encephalitis" of Binswanger) presents a characteristic picture at autopsy: the brain shows more or less pronounced atrophy which is general but which is apt to be more marked in irregular foci; the surface of the brain is smooth, the cortex, though possibly somewhat thinned, is otherwise normal in gross appearance; the white substance and often the basal ganglia present on section slit-like defects where the nerve substance has disappeared either by gradual

atrophy or through sudden infarction; these defects may be so numerous that the brain substance, riddled with them, presents a spongy appearance which has been called *état criblé;* in other cases there may be but one or two of them in each hemisphere. The distribution of the affection is variable; usually it is bilateral; in some cases, however, it may involve largely one hemisphere, the other being almost entirely spared; in other cases the ganglionic vessels are the principal seat of the affection.

The more striking clinical features of this type of cerebral arteriosclerosis are recurrent epileptiform or apoplectiform seizures and paralyses, anæsthesias, and mental deterioration the course of which is irregularly progressive, increasing with each seizure and remaining stationary or even receding somewhat in the intervals; toward the last the patients become helpless owing to paralyses, contractures, and profound dementia.

In cases in which the affection is largely confined to the ganglionic vessels the dementia is but slight. In such cases there is a special tendency toward the formation of small aneurisms which frequently burst, and the resulting hemorrhage into the basal nuclei, the internal capsule, and the lateral ventricle gives rise to the familiar clinical picture of cerebral apoplexy followed by hemiplegia, dysarthria, etc.

(5) *Disease of the cortical system of terminal arterioles* also presents a characteristic anatomical picture. The surface of the cortex instead of being smooth is irregularly pitted with small depressions which mark the sites of atrophy and contraction in the regions supplied by the cortical arterioles the lumina of which have become narrowed or even completely obstructed. The lesion is

as a rule unequally distributed but rather extensive, so that there is marked general brain atrophy. Microscopically one finds various stages of chronic nerve cell change: pigmentary degeneration, shrinkage, atrophy; the nervous elements in the affected areas ultimately disappear and are replaced by glia tissue.

Clinically the special feature here consists in various irritative phenomena followed later by loss of function: tremors, athetoid or choreiform movements, various seizures, paræsthesias, and later paralyses and anæsthesias. The mental symptoms are apt to be prominent from the beginning: hallucinations, agitation, violent excitement, confusion, inaccessibility.

Diagnosis. — General paresis may be closely simulated but can always be excluded with the aid of lumbar puncture which in cerebral arteriosclerosis regularly gives negative results.

Acute syphilitic endarteritis affecting the brain arteries may be clinically indistinguishable from cerebral arteriosclerosis. The differentiation may be made with the aid of the Wassermann reaction. Cases of arteriosclerotic brain disease, even when due to old syphilitic infection, usually give a negative reaction, for in such cases as a rule the syphilitic process is no longer active, the lesions being strictly post-syphilitic.

The differentiation from senile dementia may be difficult especially when the latter is complicated by more or less marked arteriosclerosis, as is so often the case. It must be borne in mind that senile dementia has for its basis a process of atrophy which is wholly independent of vascular disease. Focal symptoms, recurrent seizures, persisting mental insight, also stationary

condition and duration over five years, all point to cerebral arteriosclerosis. Senile dementia is not known to begin before the age of 60 years, while cerebral arteriosclerosis often begins between the 50th and 60th years, and in some cases at the age of 40 years or even earlier.

The *course* of cerebral arteriosclerosis in most cases extends over a number of years, even ten or twenty years. It is irregularly progressive, as already described. In any case sudden death may occur from embolism, apoplexy, or from exhaustion following convulsions. Kraepelin speaks of a grave progressive form which is characterized by rapid development of extreme dementia and an early fatal termination.

The *prognosis* of all forms of arteriosclerotic brain disease is unfavorable for recovery from established defect symptoms; sudden or gradual progress of the disease is to be expected to occur sooner or later, though the condition may remain approximately stationary for months or even years, especially under favorable conditions.

The *treatment* is purely symptomatic. Rest, freedom from worry or excitement, moderation in eating and drinking, abstinence from alcohol, proper regulation of the bowels may stave off progress of the disease or the occurrence of seizures.]

CHAPTER XI.

PSYCHOSES OF INVOLUTION.

§ 1. Affective Melancholia.[1]

The causes of this disease are not well known. Hereditary or congenital predisposition is found in about 60% of the cases. The most frequent factors are grief, stress, infectious diseases — tuberculosis in particular — and in women the menopause. Occurring chiefly after forty-five years of age, it seems to be intimately connected with the phenomena of organic retrogression beginning at this age; hence the name "*involution melancholia*," which is often applied to this disease.

The prodromal period, which is almost constant and usually very long, indicates a profound, slow, and progressive change of the entire organism: the process of digestion is painful; there are anorexia, insomnia, irritability, unwarranted pessimism, and a tendency to rapid fatigue.

Finally the disease sets in, characterized from the beginning by intense *psychic pain* which renders the malady deserving of the name *affective melancholia*.

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[1] [The term *affective melancholia* has been used by Wernicke to designate a condition corresponding to the depressed type of manic depressive insanity. The reader will observe that it is used here in an entirely different sense.]

It presents itself with the train of physical and psychic symptoms already studied in connection with active depression. When associated with anxiety it gives rise to *anxious melancholia.*[1]

The anxiety may result either in *agitation* (*melancholia agitata*) or in *stupor*. In the latter case the patient appears as though dumbfounded by the pain. "A frightful internal anxiety constitutes the fundamental state, which torments him almost to suffocation." [2]

When the psychic pain is very marked, it entails sometimes a certain degree of *mental confusion* which is most frequently transitory and subject to the same fluctuations as the pain itself of which it is a manifestation.

In cases of slight or moderate intensity the *lucidity* is perfect and sometimes permits the patient to analyze his case with considerable minuteness.

Association of ideas is sluggish, less so, however, than in the depressed form of manic depressive insanity. We have seen, in fact, that the intensity of psychic inhibition is inversely proportional to that of psychic pain; naturally, therefore, the inhibition occupies here a secondary position. Between the cases in which the sadness clearly predominates and those in which the inhibition is the principal feature, there is a host of intermediary forms which establish an insensible transition between affective melancholia and manic depressive insanity. These two affections seem to be closely related to each other, and borderland cases are not uncommon.

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[1] Capgras. *Essai de réduction de la mélancolie à une psychose d'involution présénile.* Thèse de Paris, 1900. — Kraepelin. *Lehrbuch der Psychiatrie.*

[2] Griesinger. *Loc. cit.*, p. 292.

[The recent study of Dreyfus[1] indicates clearly that the relationship between involution melancholia and manic depressive insanity, here pointed out by the author, is, indeed, a very close one. This study consists in a careful investigation of the entire subsequent course of all cases admitted to the Heidelberg clinic since 1892 and classified as involution melancholia. The facts revealed by the investigation are: the great majority of the cases which had not terminated in death through some complication resulted in complete recovery; in a small percentage of the cases deterioration ultimately occurred apparently on a basis of cerebral arteriosclerosis which such cases seem to be particularly prone to develop; more than half of the cases had more than one attack; in many cases manic symptoms were observed: fleeting euphoria, irritability, loquaciousness, flight of ideas, etc. These results led Dreyfus to the conclusion that involution melancholia was but a special variety of mixed form of manic depressive insanity; and Kraepelin in a preface contributed by him to the work of Dreyfus evidently accepts this conclusion in the following words: "These results show that, at least for the main bulk of the cases which we have designated as involution melancholia, there is no longer any basis compelling their separation from manic depressive insanity."

Thus it would seem that the autonomy of involution melancholia as an independent clinical entity is destroyed. We have, however, allowed the description of involution melancholia in this MANUAL to remain, partly

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[1] *Die Melancholie ein Zustandsbild des manisch-depressiven Irreseins.* Jena, 1907.

for the reason that it still figures in hospital statistics, but mainly for the reason that, admitting its kinship to manic depressive insanity, it nevertheless presents special and characteristic features, among which may be mentioned its frequent development following actual depressing causes (death of a near relative, financial ruin); its grave form characterized by long duration (in many cases over five years, in some over ten years), frequent fatal termination, combinations of symptoms not commonly observed in typical attacks of manic depressive insanity; the occurrence in nearly half of the cases of only one attack during the life of the individual.]

The sadness may in itself become a cause of psychic inhibition and create affective melancholia with stupor.

To these psychic phenomena are added physical disorders most of which have already been considered:

Respiratory and circulatory disturbances which are dependent upon the depression and anxiety.

Disturbance of the digestive functions: anorexia, dyspepsia, painful digestion, constipation.

Impairment of the general nutrition, changes in the composition of the urine (diminution of urea, slight albuminuria), and rapid loss of flesh. The latter symptom is of particular importance; a rise in weight always indicates the termination of the acute period: the patient is either entering upon his convalescence or lapsing into dementia.

The menses are usually suppressed. Their reappearance has the same prognostic significance as the return of the normal weight: it indicates either the approach of recovery or the passage into a chronic state.

Finally, there are various nervous troubles: headache, palpitation, tremors, hysteriform crises, and insomnia.

These are the fundamental symptoms of affective melancholia in its simplest form and uncomplicated by delusions. This form is rare; generally the disease assumes one of the following two forms, or some combination of the two: *anxious melancholia* and *delusional melancholia.*

Anxious melancholia. —The psychic pain, which is here very intense, manifests itself by the mental and physical symptoms of anxiety, which have already been described in the first part of this book: more or less complete cessation of mental processes, in some cases a certain degree of mental confusion at the time of the paroxysms of anxiety; an extremely distressing sense of constriction generally localized in the precordial region or in the throat, less often in the head; pallor and pinched expression of the face, coldness and cyanosis of the extremities, irregular and shallow respirations; lowering of blood pressure; small, compressible pulse, either rapid or slow; dilatation of the pupils.

From the point of view of the reactions anxious melancholia is characterized either by agitation or by stupor.

The *agitation* of melancholia presents the appearance of despair: the patient wrings his hands, strikes his head against the walls, and gives vent to lamentations and heart-rending cries. It is monotonous and often marked by very pronounced negativism. The phenomena of agitation are sometimes purely impulsive in origin and occur in the shape of sudden attacks which may be very brief. During such attacks the patients may display a tendency to violent acts of danger to themselves

or to others (suicidal or homicidal attempts). Such paroxysms constitute the so-called *raptus melancholicus.*

Psychic pain may, like physical pain, paralyze more or less completely all mental functions. Thus is explained the manner in which anxious melancholia may become transformed into *stuporous melancholia;* these two forms, seemingly so different, are in reality closely related. The psychic inhibition which characterizes stuporous melancholia is essentially a secondary phenomenon.

Anxious melancholia sometimes exists in a state of purity, either as agitated melancholia or as stuporous melancholia. Much more often it is complicated by delusions.

Delusional melancholia. — All varieties of melancholy delusions are encountered in this affection: ideas of culpability, of humility, of ruin, hypochondriacal ideas, and ideas of negation. The syndrome of Cotard scarcely ever appears except in the chronic forms. It is not uncommon for persecutory ideas to occur in combination with melancholy ideas proper.

With the appearance of intellectual enfeeblement the delusions become absurd and incoherent, as they are in all states of dementia.

Hallucinations are not frequent. The least rare are, according to Séglas, those of vision and of the muscular sense. Those of hearing, taste, and smell are occasionally met with, while those of general sensibility are altogether exceptional.

Illusions of all sorts are, on the contrary, frequent. They often assume the form of *mistakes of identity.*

Finally, *delusional interpretations* are constant. The

patient hears the noise of hammer-strokes in the vicinity and thinks a scaffold is being built for him. He hears the sound of voices in the street and thinks the mob is going to seize and lynch him, etc.

The reactions are usually in harmony with the melancholy state and with the nature of the delusions. Sometimes, under the influence of anxiety which in many cases accompanies the delusions, the reactions assume an exclusively automatic character; it is to be noted that negativism is not uncommon.

The following case illustrates both delusional melancholia and anxious melancholia.

Margaret L., fifty-eight years old. — Paternal and maternal heredity: father was alcoholic, died of disease of the liver; mother eccentric, unduly irritable; one maternal aunt committed suicide. — The patient has always been nervous and sensitive. She has been, however, of normal intelligence and always attended properly to the work of her home and family. She has two daughters, respectively thirty and twenty-five years old, both normal. Menstruation ceased two years ago.

The mental symptoms began with a state of general depression and discouragement. On being invited to a christening of a little boy she refused to go, giving as her reason that life is a burden and that there is no cause for rejoicing in the birth of a child. After several weeks she began to show very marked uneasiness and a little later delusional interpretations. She saw wagons passing by the house loaded with various objects, furniture, bedding, barrels, sacks of flour; she heard the drivers cracking their whips; all this alarmed her greatly and she asked her husband whether all this did not signify that she was to be thrown out of the house and left to starve to death. She noticed also that the neighbors looked at her queerly whenever she met them. At the same time physical symptoms appeared: complete loss of appetite, headaches, insomnia. About two weeks later, namely, March 20, 1900, she developed an idea of self-accusation. About twenty-five years ago she lost a little daughter from croup. Did not this child die because its mother had left it one day with its feet wet? This

idea at first had the character of an imperative idea; the patient knew it was false and tried to drive it away; it, however, grew more and more dominating and was finally accepted by the patient as true: the *imperative idea* became a *fixed idea.* The psychic pain increased steadily. New delusions sprang up, the first one, however, still remaining active. On April 12 the patient went to the police headquarters carrying a bundle of clothing; this, she said, was for those poor girls who are robbed of everything and thrown out into the street. At the same time she begged the police authorities to send men to protect those unfortunate women whom the Prussians were about to ravish.

On being taken to a sanitarium she did not cease to wail and to lament, first accusing herself, as formerly, of the death of her little girl, later of the illness of her husband, who really did have heart trouble. Gradually the delusions grew. She claimed she had brought upon her relatives such disgrace and misery that they all committed suicide; the letters which she is supposed to receive from them are false; no doubt this is done to console her; everybody has been too good to her; a nasty creature like her should have her head chopped off. There she is, well fed and housed, and warmly dressed, yet they know well that she has no money to pay for all this. But this cannot last; pretty soon the day will come when they will put her out to go and beg. She developed a few hallucinations of sight, of hearing, and of muscular sensibility: several times she saw before her a pool of blood; also several times she heard the voices of her children crying: "Bread! Give us bread!" Finally she complained of feeling an inner voice coming from her breast, which made her say against her own will: "Slut! slut!" She cries loudly, begging to be put to death; has made repeated attempts to commit suicide; from April 21 to October 30 five such attempts were counted, three of which were by hanging. For a time she refused food; after being tube-fed for two days, she began to eat again, although with much difficulty.

Considerable emaciation. Tongue coated. Breath very foul. Constipation. Slight trace of albumen in the urine.

Such is the fundamental and habitual state of the patient. The anxiety, without being ever entirely wanting, presents, however, periods of exacerbation so that the patient at times shows the typical picture of anxious melancholia. During such paroxysms the patient seems to be literally suffocating. She seems to be striving to throw off a weight from her chest; she pulls her hair, strikes herself in the face, and scratches at the walls of her room

until her fingers bleed. When her agitation is at its height it is impossible to obtain from her a response to any question. She merely utters inarticulate cries or repeats in a low, scarcely audible voice: " My God! . . . My God! . . . " Her consciousness is then evidently profoundly affected and it seems that even delusions at such times disappear under the influence of the psychic pain and the anxiety.

Towards the latter part of November, 1900, the general condition of the patient improved. Her appetite became better. The delusions persisted and the patient continued her lamentation, but the reactions became less pronounced. Little by little the delusions also became less active. A certain degree of mental activity returned. Towards the middle of December the patient was able to do some manual work. She returned home, completely cured, February 6, 1901. At the present time (1905) she is still perfectly well.

Prognosis. — Melancholia may terminate in:

[(*a*) Complete *recovery*, 66%;

(*b*) *Dementia* due to the development of cerebral arteriosclerosis, 8%;

(*c*) *Death*, 25%,[1]] which may be due to:

(I) *Suicide*, which is the more likely to occur the more pronounced the psychic pain and the less marked the inhibition. The melancholiac may commit suicide at any period of his illness, even during convalescence, when, on account of a real or fictitious gaiety, supervision over him is relaxed;

(II) To *melancholic wasting*, the principal factors of which are intense sadness, anxiety, agitation, and insufficient alimentation occasioned by a poor condition of the digestive tract, by a delusion, or by a suicidal idea;

(III) To some *complication* the occurrence of which

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[1] Dreyfus. *Loc. cit.*, p. 269.

is favored by the defective nutrition of the tissues: pneumonia, influenza, tuberculosis.

The *duration* of the affection is very variable, from several weeks to a few years.

Treatment. —The principal indications are:

To watch the patient with a view to the prevention of suicide;

To support his strength;

To calm agitation if there is any;

To pay special attention to the alimentation.

The first three indications are admirably fulfilled by rest in bed.

Forced alimentation is often necessary to fulfill the fourth.

The psychic pain may be efficaciously combated by the administration of opium in increasing doses. One may start with 15 minims of the tincture per day, increase to 60 minims or more, and then gradually reduce the quantity to the initial dose before discontinuing the treatment.

Finally, prolonged warm baths are often of great service in the agitated forms.

§ 2. Senile Dementia.

Senile dementia may be defined as a peculiar state of intellectual enfeeblement, with or without delusions, resulting from cerebral lesions determined by senility.

Age is here, therefore, the great etiological factor; it is, however, not the sole factor. Many individuals attain extreme old age without presenting any appreciable intellectual disorders; others, on the contrary, have scarcely passed over the threshold of senility

when they are already veritable dements.[1] The effects of age are the more powerful and the more precocious the more marked the predisposition. Heredity, the intoxications (alcoholism), overwork, violent and painful emotions, traumatisms, etc., by diminishing the vitality of the cerebral cells render them more susceptible to the influence of senility.

Statistics furnish a rather small proportion of congenitally predisposed persons among senile dements, but this is due to the fact that it is frequently impossible to obtain reliable family histories in such cases.

Senile dementia is rare before the age of sixty years. Alcoholism sometimes brings about an analogous state of intellectual enfeeblement, appearing towards fifty or fifty-five years, which has been designated by the term *sœnium præcox.* Such cases are exceptional if we exclude ordinary alcoholic dementia.

The *onset* sometimes follows some strong emotional shock, financial troubles, or a somatic affection. Almost always it is insidious, marked simply by a change of disposition and slight disorders of memory. When fully established the dementia presents the following fundamental elements:

(*a*) *Impairment of attention and sluggishness of association of ideas*, readily demonstrable by psychometry, as has been shown by the experiments of Rauschburg and Balint.[2] (These authors performed their experiments upon cases of simple senile dementia without delusions.)

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[1] Russell. *Senility and Senile Dementia.* Amer. Journ. of Insanity, 1902.

[2] *Ueber qualitative und quantitative*, etc. Allgem. Zeitsch. für Psychiat., 1900.

A curious fact observed in these experiments is that associations of ideas were almost always determined by the sense of the words, and rarely by similarities of sound or by rhymes. It will be remembered that associations by similarities of sound are the result of automatic psychic activity; it seems, therefore, that mental automatism, instead of being exalted, as it is in certain psychoses (mania), is like voluntary psychic activity, diminished, at least in simple senile dementia without delusions.

(*b*) *Inaccurate and incomplete perception of the external world*, the consequence of which is the production of numerous illusions and of disorientation of place.

(*c*) *Disorders of memory*, comprising:

(I) *Amnesia of fixation* (anterograde amnesia), which entails disorientation of time;

(II) *Amnesia of conservation* (retrograde amnesia), which is progressive and which follows almost perfectly the law of retrogression;

(III) *Illusions and hallucinations of memory*, which form the basis of pseudo-reminiscences, often absurd or puerile in character and varying from one instant to another.

(*d*) *Impoverishment of the stock of ideas:* old impressions disappear and are not replaced by new ones. This is the cause of the tiresome repetitions in the discourses of old dotards.

(*e*) *Loss of judgment:* the patient does not accept new points of view. He mourns for the good old times and shows a profound contempt for new ideas which he is incapable of assimilating. This contempt for the present is met with in most old people, but not

in combination with any appreciable mental deterioration.

The senile dement has no realization of his own condition. Often he boasts of his endurance, his strong will, his lucid mind, and declares that he is in no need of assistance from any one and that he is quite well able to manage his own affairs.

(*f*) *Diminution of affectivity, morbid irritability:* hence the indifference of senile dements for their relatives and their interests, their unprovoked outbursts of anger, their tyrannical tendencies, and their occasional emotionalism.

(*g*) *Automatic character of the reactions:* from this point of view senile dements may be divided into two classes: the *turbulent* and the *apathetic*.

The *turbulent* are always moving, intrude everywhere, give unreasonable or contradictory orders, get up during the night and wander about the house with a candle in their hand at the risk of starting a fire. Their mood is either depressed or elated and hypomaniacal. Sexual excitement, most often purely psychic, is quite likely to be associated with this state, and, together with the intellectual enfeeblement, leads the patient to dangerous acts: attempts at rape, indecent exposures, etc.[1]

The *apathetic* senile dements have an indifferent, stupid aspect. The patient's mouth, half open, allows the saliva to dribble; he remains motionless upon the chair where he has been placed; he is docile, obedient,

[1] By the term *exhibitionism* has been designated a morbid tendency, which certain psychopaths have, to exhibit publicly their genital organs.

and very suggestible. When in the hands of unscrupulous persons, he allows himself without protestation to be swindled and maltreated, and unconsciously yields to inveiglements for imprudent disposal of his property.

In advanced stages of the disease the turbulent as well as the apathetic senile dements frequently become *filthy*, often soiling and wetting themselves.

Sleep is diminished and often even absent in the excited forms. On the other hand, constant somnolence is frequent in the apathetic cases.

Together with the dementia there are the regular signs of senility. The skin is wrinkled and discolored; the hairy system is undergoing atrophy; the patellar reflexes are sometimes abolished, but more frequently exaggerated; the pupils are slightly myotic and paretic; *arcus senilis* is well marked; there is hypoæsthesia of all the senses; all movements are awkward and uncertain; there is diminution of the muscular power; senile tremors affect the entire body and especially the head, consisting of coarse oscillations.

The *cardio-vascular* symptoms are of great importance.

[The frequent association of senile dementia with arteriosclerosis has already been mentioned. Vascular disease is, however, not invariably present and is often but slight: senile atrophy is a process essentially independent of arteriosclerosis.]

The *appetite* is diminished, or, on the contrary, it may be exaggerated to a degree constituting voracity. In the latter case the patient's diet should be carefully regulated to prevent grave gastro-intestinal disturbances.

Delusional Forms. —The delusions bear the stamp of dementia: they are absurd, changeable, and present

little or no tendency to systematization. They may be of the following varieties:

(*a*) *Ideas of persecution,* which in their mildest form manifest themselves by mere suspiciousness such as is always common in old persons. Their form is varied: ideas of poisoning, of theft, of jealousy, fear of being killed, etc.

Persecutory ideas are more likely to become systematized than any others, though the systematization is very imperfect, and more likely to be accompanied by hallucinations, chiefly of hearing and of vision. Sometimes these delusions appear long before any evidences of dementia, constituting the *presenile paranoid state* (*præseniler Beeinträchtigungswahn* of Kraepelin).

(*b*) *Melancholy ideas* of all possible types: ideas of self-accusation, of ruin, etc. Ideas of negation are very frequent.

(*c*) *Ideas of grandeur,* which are at times absurd, resembling those of general paretics.

The delusions are associated with a corresponding state of the emotions and of the reactions. Three principal forms of delusional senile dementia may be distinguished:

(1) *Persecutory form:* ideas of persecution; reactions of self-defense which may at times be violent.

(2) *Melancholic form:* melancholy ideas, psychic pain, depression, anxiety, suicidal ideas.

(3) *Maniacal form:* euphoria, ideas of grandeur, variable moods, impulsive reactions, sometimes flight of ideas, erotic tendencies, etc.

Senile dementia is sometimes marked by acute attacks characterized by complete disorientation and hallu-

cinations, closely resembling certain phases of general paresis, but especially delirium tremens [*senile delirium*]. These attacks, usually very brief, terminate either in death or in a return to the previous condition. They may occur in old persons independently of any intellectual enfeeblement (Wernicke).

The principal *complications* of senile dementia are:

Apoplectic and sometimes *epileptic seizures* (senile epilepsy), hemiplegia, aphasic phenomena, etc.

Alcoholism in the form of episodic accidents (delirium tremens) or of alcoholic dementia may be associated with senile dementia.

The *prognosis* is fatal. The affection always follows a progressive course. Remissions are very rare and never complete. Death usually supervenes at the end of from three to five years, as a result of senile cachexia, of some intercurrent disease (pneumonia), or of apoplexy.

Not all psychoses occurring at an advanced age are senile dementia. Old men present attacks of manic depressive insanity, paranoia, and other psychoses which differ in no way from those observed in younger people.[1]

The *diagnosis* is based upon the pathognomic features of the dementia.

Affective melancholia and *manic depressive insanity* may be distinguished by the absence of intellectual enfeeblement, by the preservation of lucidity, and

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[1] Thivet. *Contribution à l'étude de la folie chez les vieillards.* Thèse de Paris, 1889. — Régis. *Psychoses de la vieillesse.* Ann. méd. psych., March-April, 1897. — Ritti. *Les psychoses de la vieillesse.* Congrès des médecins aliénistes et neurologistes, 1896.

by the intensity of the affective phenomena — psychic pain or euphoria.

General paresis may be differentiated by the more rapid development of dementia and by its special physical signs.

Alcoholic dementia shows the physical signs of chronic alcoholism: muscular pain, tremors, gastric disorders, etc. Senile dementia and alcoholic dementia may exist together.

The *anatomical lesions* arise from a process of wear and atrophy: atheroma of the cerebral arteries, thickening of the meninges, diminution of the weight of the brain, which may sometimes fall below 1000 grams; thinning of the cortex; diminution of the number of nerve-cells, chromatolysis, pigmentary degeneration, atrophy; disappearance of a large number of tangential fibers.

The *treatment*, purely symptomatic, consists chiefly in hygienic measures. Commitment is but seldom necessary. The majority of cases are best treated in special asylums for the aged or in private homes.

CHAPTER XII.

MANIC DEPRESSIVE INSANITY.[1]

CHRONIC MANIA.

MANIC depressive insanity is manifested in attacks presenting a double characteristic: a tendency towards recovery without intellectual enfeeblement and a tendency towards recurrency. From a symptomatic standpoint the attacks are of three types, which I shall describe successively:

Manic type;
Depressed type;
Mixed type.

§ 1. MANIC TYPE.

Mania presents itself in three principal forms: simple mania, delusional mania, and confused mania. We shall first study simple mania, which, more clearly than the other forms, exhibits the following four fundamental symptoms of the disease:

Flight of ideas;
Morbid euphoria and irritability;
Impulsive character of the reactions;
Motor excitement.

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[1] Kraepelin. *Lehrbuch der Psychiatrie*, Vol. II.—Weygandt. *Ueber das manisch-depressives Irresein.* Berlin. klin. Woch., 1901, Nos. 4 and 5.

Simple Mania. — *Prodromata.* — The phenomena of maniacal excitement are constantly preceded by a period of depression characterized by diminution of psychic activity, which sometimes amounts to a veritable melancholic state. Later on we shall see the importance of this prodromal period as an argument for the unity of manic depressive insanity.

External aspect.—The face of the maniac is flushed, the eyes brilliant, the expression happy and animated. The manner and gestures indicate a state of ease contrasting often with the usual timidity of the patient. The dress is showy, ridiculous, and ornamented with gaudy trinkets; the clothes are disordered, perhaps put on inside out. In women a bodice excessively décolleté and the skirt raised too high show also the erotic tendencies.

Intellectual disorders. — Lucidity is perfect, orientation and memory are intact.

The *attention,* very *mobile,* is distracted by all external impressions.

Associations of ideas, uncontrolled, are formed at random from similarities of sound, superficial resemblances, coexistences in time and space, etc. *Flight of ideas* is here encountered in its typical form.

These two symptoms, mobility of attention and flight of ideas, are, as we have already seen, an expression of enfeeblement of the normal psychic activity and of the predominance of mental automatism. Under these conditions the capacity for intellectual labor is diminished.

The *judgment,* which is largely dependent upon associations of ideas, is always profoundly disordered.

Though occasionally the patient surprises one by the accuracy of his observation, it is always the result of a sort of automatic appreciation bearing upon some isolated fact. But since judgment necessitates the systematic grouping of a very considerable number of ideas, it is here either absent or at least impaired. A maniac who notices some slight defect in the dress of the examiner is incapable of appreciating the importance of an event or of an act.

Affective disorders. — These consist in *morbid euphoria* and *irritability.*

The *euphoria* is often very marked. Many patients after recovery declare that they had never felt so happy as they did during the attack. The maniac is pleased with everything, and the contrast is particularly striking when the excitement follows a period of depression (insanity of double form). The most imperturbable optimism replaces the pessimism of past days. Of disease insight there is no question at all; the subject "never before felt so well"; if he is "somewhat nervous" the fault is with his relatives, the physicians, or the nurses, who constantly interfere with him. With his intelligence and activity he could "easily conduct important and gigantic enterprises." If he were allowed liberty of action, he would show everybody what he is capable of.

Sad impressions are dismissed with a vague remark or a joke. A maniac, reminded of the loss of his fortune in a fire (which incidentally was the cause of his disease), replied laughingly: "Money does not bring happiness, and besides I shall have earned twice as much six months from now."

This optimism, however, is never so absurd as that of general paretics or of senile dements. Dumas cites the case of a general paretic who, reminded of the recent death of his two little daughters, replied: "Well, well! I shall resuscitate them." A maniac would never have given such an answer.

The *irritability* is evident in the violent outbursts of anger which occur on the slightest provocation. The maniac will bear no contradiction and will accept no suggestions.

The *moral sense* is always diminished; the sense of propriety is greatly affected. The maniac is cynical, dishonest, and mischievous. "He lies, cheats, and steals without the least scruple. He allows himself anything that in others he would condemn" (Wernicke). Quite frequently he will tease and mock others. If in the midst of his rambling speech some pointed or amusing remark occurs, it is always at the expense of others.

Erotic tendencies form an integral part of the picture: the patients abandon themselves to them without shame. Men previously exemplary in habits go around with prostitutes. Young girls, normally very reserved in their manner, offer themselves to everybody.

One frequently sees maniacs indulging in *alcoholic excesses.*

The patient is incapable of appreciating the significance of his acts either before or after they are accomplished. The most deprecable acts are displayed with complacency and become the object of cynical pleasantries; compunction and scruples are absent.

Reactions. —The erethism of the psychomotor centers, constant in mania, gives rise to *maniacal excitement* the elements of which are imperative want of movement, abnormal rapidity of the reactions, and impulsive character of the acts.

Maniacal excitement always has a psychic origin (Wernicke); the acts, though impulsive, are dependent upon an appreciable cause and have a definite purpose.

This excitement often assumes the aspect of morbid activity which, lacking in logical sequence, remains unproductive when it does not become harmful. The maniac every instant leaves one task to begin another, or undertakes tasks for which he possesses neither the necessary aptitude nor the qualifications. A farmer, fifty years of age and scarcely able to read or write, wanted to undertake the study of Hebrew "to unite the Jews and the Protestants."

The maniac is strongly inclined to intrude into the affairs of others, causing, as might be expected, much trouble. He offers his advice and assistance to everybody. In the asylum he accompanies the physician on his rounds, makes diagnoses, and prescribes treatment. Often he tries to assist the nurses, who find it very difficult to moderate his zeal.

In the more marked degrees the excitement leads the patient to many eccentricities. He removes his clothing, replaces it; executes pirouettes and dangerous leaps; sings obscene songs; performs grimaces and contortions for the amusement of his spectators; and frequently annoys others in a thousand ways.

The *conversation* is animated, strewn with eccentric expressions, strange words and puns. The language may

be either profane and obscene or marked by a labored refinement. The tone may be jocose or solemn, accompanied by the gestures of a gamin or, on the contrary, by those of a commander or a preacher. There is often a veritable *logorrhœa.*

The *writing* presents analogous characteristics. Volubility and prolixity are manifested by whole pages scribbled within a few minutes. The lines cross each other in every direction, the letters are large in size, and capitals and flourishes are abundant. Often there is *maniacal graphorrhœa,* analogous to the maniacal logorrhœa referred to above.

The discourse is conducted at random: reflections upon questions of transcendental philosophy as well as upon those of dress or cooking; slander and intimate confidences, extravagant projects, and erotic proposals. The maniac conceals nothing.

Physical symptoms. — We find in mania the physical symptoms which, we have already seen, are associated with morbid euphoria: the general nutrition and the peripheral circulation are active, the pulse is full and rapid, respiration is deep and accelerated, the appetite is good, and the weight increases.

Sleep is diminished, occasionally altogether absent; but in spite of the insomnia the patient experiences no fatigue.

Often in women the menses are suspended, and their return announces the approach of recovery. When they persist through the attack their appearance is likely to provoke a recrudescence of excitement.

Delusional mania. — The fundamental symptoms are the same as those of simple mania. The excitement

may be more marked and the lucidity perhaps transitorily disturbed.

The delusions are usually *mobile* and consist in *ideas of grandeur.*

The most varied delusions follow each other, modified every instant by external impressions. The patient assumes all the titles mentioned to him: he is in turn pope, physician, and admiral. Occasionally the delusions are referred to the past and take the form of *pseudo-reminiscences:* a shoemaker pretended to have directed an expedition to the North Pole.

The patient often transforms the surroundings in which he finds himself. A maniac called the head nurse of the service where he was treated the chief of his military station, and the physician the prince of Sagan.

The costume corresponds with the delusions: the patients clothe themselves in fantastic uniforms, cover their chests with decorations, comb their hair in the style of Bonaparte, etc.

Sometimes one delusion persists and remains fixed during the entire duration of the attack in the midst of more mobile accessory delusions: a modest business agent for several months proclaimed himself to be the President of France, and referred to the physicians and nurses as his " grand staff."

The maniac never has absolute faith in his delusions. His conviction is easily shaken. Often even he himself only half believes in the pompous titles that he gives himself; his delusions are a sort of pleasantry with which he amuses himself and with which he mystifies those about him.

Some ideas of persecution, mostly bearing upon the deprivation of liberty, may occur in addition to the ideas of grandeur. In some cases even hypochondriacal ideas may occur. The patient declares that he is afflicted with a grave disease, but that he will cure himself "by taking a trip to London" or by having an operation done by "the greatest specialists of Paris and America."

Hallucinations are rare and fleeting. On the other hand, *illusions* are frequent and lasting; they often assume the form of mistakes of identity: the patient is apt to believe himself surrounded by his acquaintances and by familiar objects.

In grave forms, during the excited paroxysms, the consciousness at times undergoes a *certain degree of clouding* and the period of illness leaves but a very vague impression, or none at all, upon the memory.

The following case is a good example of delusional mania.

Gabrielle L., fifty-two years old, housewife. Family history unknown. The patient has always been impressionable and lively; intelligence normal. She had five previous attacks of mania, the first at the age of nineteen; all terminated in recovery.

The present attack began with rambling speech, assaults upon others, and a tendency to alcoholic excesses; the patient, though usually temperate, began to drink to intoxication. She was taken to the Clermont Asylum where Dr. Boîteaux issued the following certificate of lunacy: "Condition of acute mania with extreme disorder of ideation, speech, and conduct. Illusions of the senses. Obscene actions. Ideas of grandeur: owns millions, heavens and earth. Excited, difficult to control."

On February 25, 1904, one month after the patient's admission to the asylum, examination was as follows: Medium stature, strong constitution, slight obesity, skin flushed, voice loud, gestures lively, clothing disarranged, hair down over the shoulders. From the

beginning the patient showed extreme familiarity. She offered her arm to the physician, whom she took to be the husband of the head nurse, and laughingly asked the latter if she was not jealous. She was well oriented as to place; she knew that she was at the Insane Asylum at Clermont where she had already been five times before. Her orientation of time was somewhat inaccurate: she said the year was 1904, that it was the spring of the year, and gave the date as March 25 (actual date February 25, 1904); on being asked to think a while and make sure of the date, she said: "Why, of course it is March, a few days ago we had a holiday, that was Mid-Lent." (She was evidently referring to Shrove Tuesday.) Later other ideas appeared and it became impossible to prevail upon the patient to reflect properly before speaking. She had a certain realization of her condition: she said she felt odd, "at times driven to play all sorts of silly pranks." She was very obedient, and always started out with remarkable eagerness to carry out any order that might be given her. But her extremely mobile attention caused her to be each instant distracted from the object to be attained. She was asked to write a letter: "Why, certainly! To whom?" To whomever you wish. "Very well, to the President of the Republic? To the Minister of War? No, I shall write to my husband." Then she began to write: *To Mr. L., Gardener in C.* . . . Then turning again to the physician: "Because, you know, we have been living in C. . . . for the past eighteen years. I have a house there. The hospital at C. . . . belongs to me. I know Sister Antoinette there. They wanted me to disguise myself as a Sister, but my husband wouldn't have it. He adores me, my husband does!" She was again asked to write, which she did, jabbering all the time and reading aloud everything she wrote. Every moment her attention kept getting distracted by the conversation of the persons in the room, although they spoke in a low voice and upon matters which did not concern the patient. They spoke, in fact, about another patient who helped the nurses with the service in the dining-room. "Good gracious!" exclaimed the patient, interrupting her writing and bursting out with laughter, "that woman is pretty stingy with her bread! One would think she was paying for it! It was I that gave her the money to buy it with!" When asked again to continue her letter she willingly resumed her writing. A minute later they spoke about another patient, and someone made the remark, "She does not sleep." This started the patient again: "Who, I? I don't sleep? Why, I sleep like a dormouse!" It is to be noted that she wrote slowly,

seeking her words. Having had but little schooling, writing in her case did not develop into an automatic function. She threw down her pen after having written a few disconnected lines. She was then given a paper and asked to read aloud one of the news items. Her attention was at once attracted by a picture below the news item and she exclaimed, pointing to it: "Here is a pretty woman! She resembles Mrs. P." She was again urged to read. She read the first line with difficulty, owing to her poor vision, and continued to read on the same level in the next column. Again the above news item was pointed out to her. It was about some poor old man. The patient at once stopped her reading: "This is a jolly story! The poor old man! and the veterans! I visited them once, also the buildings for arts and for commerce." With a good deal of urging she was finally induced to read the entire news item; but it made very little impression on her mind; a quarter of an hour later she was unable to tell even briefly what she had read, declaring simply that it was something about an old man. "It is very sad," she added, "sad and humiliating. Thinking of death always distresses me, but I am very fond of flowers. My husband is a gardener in C. . . He buys his seeds from Vilmorin, also his tobacco." Numerous unsystematized *grandiose delusions:* she is a midwife, she studied for forty years; she is a millionairess, owns mansions; her husband has invented perpetual motion, made the model with nothing but his knife; he has also invented a method for making cheese boxes out of the stalks of rye, which he will sell for ten cents apiece. He is related to the king of Italy and is of noble descent. In her delusions the patient showed marked suggestibility: she was asked, "Have you ever been on the stage?"—"Why, yes, I played in *The Chimes of Normandy.*" Here she began to sing: "Will you look this way, will you look that way?" Her children are also actors. She played with them at the Castle Theatre, also with Sarah Bernhardt. Here her eye fell upon the word "Minister" printed in large letters in the paper; she said: "My husband has not yet been made Minister, but with his ability he will not have to wait long." She has no hallucinations, but numerous *illusions,* especially those of vision. She thinks she knows all those about her. One nurse is her cousin, another is her neighbor living across the street. Her *motor excitement* is very marked. The patient tries to do every kind of work; she makes a few sweeps with the broom, then suddenly rushes to assist a nurse carrying a pail of water, then leaves the nurse with her pail of water to go and make peace between two quarreling

patients. Without any intention of malice, she has frequent altercations with other patients who are annoyed by her screams, her songs, and her wild pranks. She picks up the most varied objects and accumulates them in her clothes: scraps of paper, bits of glass, wood, and metal, pieces of bread and of cheese. She herself laughs when an inventory is taken of all this rubbish, and makes no objection to its being taken away from her.

No noteworthy disorders in her general condition. She eats at all times, abundantly and gluttonously. Sleep somewhat disturbed: she passes part of the night wandering about the dormitory, singing and jabbering.

Confused mania. — Clouding of consciousness is here permanent. The attack begins suddenly or after a short prodromal period, characterized from the beginning by complete disorientation, very great excitement, and totally incoherent delusions. Numerous hallucinations always accompany the delusions. The form of the delusions is very variable: in confused mania are often encountered ideas of grandeur, of persecution, and occasionally, by way of an accidental episode, some melancholy delusions.

Even when the grandiose ideas predominate euphoria is very frequently absent. The cause of this anomaly probably exists in the purely automatic character of all the psychic manifestations. To provoke a sense of pleasure the activity must be conscious, that is to say, accompanied by a voluntary effort, no matter how slight; whereas in confused mania fragmentation of the personality is such that the flight of ideas is effected with extreme facility: the effort is absent and with it the euphoria.

The patient loses weight, the features become drawn out, the pulse grows small and depressible. The intensity of the excitement permits of no regular alimentation.

Filthy tendencies are frequent: unless watched constantly the patient is apt to smear the walls, his bed, his clothing, and his own body with fæces. Some will even eat fæces.

The attack may terminate in death, either from general exhaustion or from some intercurrent complication: pneumonia, suppuration occasioned by traumatism, etc.

General course, duration, and prognosis of a maniacal attack. — The course of mania is capricious. In a general way it may be represented by a curve which at first ascends, then remains horizontal for a longer or shorter time, and finally gradually descends. But this curve, far from being regular, is interrupted by oscillations indicating either sudden exacerbations or attenuations of the symptoms, or even true remissions the duration of which may vary from several minutes to several days.

The progress of the attack may also be interrupted by phenomena of depression which are sometimes quite marked, though very brief in duration. As we shall see later on, this fact contributes to the proof of the homogeneity of manic depressive insanity.

The *duration* of the attack, whatever its form, cannot be predicted. Some attacks terminate in a few hours, deserving a place among the *transitory insanities*, others continue for several years.

The *prognosis*, leaving out the cases in which life is endangered by the intensity of the excitement or by some complication, is *favorable* as to the termination of the attack itself. Recovery with *restitutio ad integrum* is the rule.

In some cases recovery has been observed to occur following some acute somatic disease.

Treatment. — Rest in bed in these cases performs miracles. It is well accepted and easily instituted. Unfortunately it is not possible at present to say whether or not it actually shortens the duration of the disease.

§ 2. Depressed Type.

The fundamental symptoms of the depressed type of manic depressive insanity are:

Psychic inhibition;

A painful emotional state associated with indifference;

Aboulia.

As in the case of mania, we distinguish here three forms: simple, delusional, and stuporous depression.

Simple depression. — *Onset.* — Usually insidious, preceded by ill-defined prodromata, such as general tired feeling, insomnia, anorexia, discouragement.

The *external aspect* of the patient is one of sadness, listlessness, and indifference. The features are drawn out, the head bowed down upon the chest, the arms hanging inertly at the sides or resting upon the knees. The general bearing is slouchy.

Intellectual disorders. — The *psychic inhibition* brings about very marked weakening of attention and considerable sluggishness of the association of ideas. All intellectual exertion, such as the narration of an event well known to the patient or a small calculation, is impossible or can be accomplished only after repeated and painful efforts. Though lucidity is intact, the *perceptions* are incomplete, uncertain, and often inac-

curate. Everything appears to the patient strange or unrecognizable: persons, objects, and even his own body. Here we have a condition bordering upon a delusional state. Another step and we have illusions and hypochondriacal ideas.

The disorders of *judgment* are less marked than in mania. The patient is quite frequently conscious of his condition to some extent. He feels that he is changed, ill, and it seems to him that his mind is paralyzed.

Affective disorders. — The mood is sad, gloomy, pessimistic. The patient emits monotonous groans. While the maniac brings disorder into a service of an asylum, the melancholiac brings depression and gloom.

The *psychical anæsthesia* is always very marked, and sometimes the patient is conscious of it. He complains of having become indifferent towards everything, of experiencing no affection.

Upon this general state of depression and sadness may be engrafted a spell of anxiety, usually transient. In no case, however, is the psychic pain so intense as in affective melancholia. The depressed phases of manic depressive insanity correspond to passive depression.

Disorders of the reactions. — These all result from the marked aboulia present in such cases, which is, in its turn, a manifestation of the psychic paralysis.

The execution of the simplest act necessitates an effort so great at times that the patient gives up the attempt. As in the case of the psychic indifference, this symptom may be a conscious one.

Combined with insufficiency of perception, aboulia

brings about *doubt*. The patient lives in constant indecision and uncertainty.

Conversation with the patient is most unsatisfactory. Often, in spite of all persistence, the patient remains mute or responds by an unintelligible murmur or whispering. The mental synthesis necessary for an elaboration of a response is impossible for him. In the milder cases, to some very simple questions repeated several times brief answers are obtained.

The voice is scarcely audible, the speech is indistinct. The same words are constantly reiterated, expressing doubt, indecision, sadness: "What is this?... What is going to happen?... This is frightful."

The *writing* is slow; letters are poorly formed, small, disconnected.

Physical symptoms. — These have already been described in connection with morbid depression. I shall review them briefly.

The peripheral circulation is sluggish, the extremities cold and cyanotic. The pulse is small, of low tension, sometimes slowed. The heart-sounds are muffled. The temperature may be subnormal.

The coated tongue, fetid breath, a sense of weight in the stomach, constipation, and anorexia reveal a *poor state of the digestive functions*.

Loss of weight is a constant phenomenon. The return to the normal weight always indicates the end of the attack.

Sleep is diminished, unrefreshing, disturbed by nightmares.

Often the patient complains of *headache* and of *vague pains* in the limbs.

The *cutaneous sensibility* is blunted.

The *tendon reflexes* are often diminished, sometimes abolished.

Delusional depression. — Always secondary to the emotional state, the delusions are preceded by a longer or shorter period of simple depression.

They present the usual characters of depressive ideas and assume the most varied forms: hypochondriacal ideas, ideas of humility, of self-accusation, or of ruin, fear of terrible punishment.

As in affective melancholia, the morbid idea may occur at first in the shape of an imperative idea. The mind realizes it is false and tries to reject it. After a more or less prolonged struggle, the mind yields: the *imperative idea* becomes a *fixed idea*, and a delusional state is established.

Occasionally these delusions are quite absurd and resemble those of dementia. In other cases they are associated with ideas of persecution and become systematized to a certain extent, constituting a systematized delusional state of self-accusation or of persecution, as the case may be.

Hallucinations are rare. The least exceptional are those of vision.

Illusions, though less numerous than in mania, are, however, quite frequent. Following the general rule, the psycho-sensory disorders are an expression of the delusional preoccupations.

Lucidity may be transitorily affected. The usual inertia is sometimes effaced and replaced by a certain degree of excitement. In other cases it becomes, on the contrary, more marked, giving rise to transient stupor.

Depression with stupor. — This form rarely begins as such; it is usually preceded by simple or delusional depression.

The characteristic trait here is complete inertia, associated with absolute indifference to all external impressions. The physiognomy is stupid, sometimes expressing fear.

The usual physical symptoms of depression are here very pronounced.

Almost always the patient becomes negligent and *filthy*, wetting and soiling his bed.

In some cases may be observed a tendency to cataleptoid attitudes.

The stupor may have one of *two different origins:*

(1) The psychic inhibition reaching an extreme degree of intensity suppresses all conscious and voluntary intellectual activity. The indifference is complete, the psychic pain, on the contrary, becoming nil; in fact inhibition is never perceived as a painful phenomenon unless the mind seeks to overcome it; in the stupor the arrest of psychic activity is so complete that the patient makes no attempt to react.

(2) The patient's mind is preoccupied by intense, frightful delusions. There is an endless succession of terrifying hallucinations analogous to those of epileptic delirium. The patient is in a frightful nightmare which completely absorbs him, rendering him insensible to impressions of the external world.

Course, duration, and prognosis of the depressed type of manic depressive insanity. — As in mania, the course is irregular, interrupted by temporary remissions and exacerbations. The duration varies within very wide

limits, from a few days to several months or even years; the prognosis is always favorable for recovery from the attack, except in cases with grave somatic complications. Physical improvement, especially increase in weight, usually indicates the approach of recovery.

The **treatment** consists in:

(1) Sustaining the strength of the patient by rest, especially rest in bed, and by a plentiful and nutritious diet;

(2) Careful watching to prevent suicide;

(3) Calming agitation, when present, by the usual procedures;

(4) Combating the gastric disorders and the phenomena of autointoxication that are so frequent in states of depression.

Psychic treatment in the form of suggestion, moderate physical and intellectual labor, etc., is of great service during convalescence, but is absolutely contraindicated during the entire acute period of the disease.

§ 3. Mixed Types.

Attacks of mixed form, properly so called. — Kraepelin has thrown light upon the true nature of these cases, which are more frequent than is generally supposed and in which the symptoms of excitement and of depression appear in the same patient at the same time.

In one group of cases the usual signs of depression are associated with extreme mobility of attention and veritable flight of ideas. The patients complain that the direction of their thoughts escapes them. "My head always wanders," said one such patient:

"I cannot fix my attention upon anything." Occasionally there is *melancholic logorrhœa.* Many depressed patients show a surprising prolixity and harass those about them by unceasing incoherent lamentations about their unhappy lives.[1]

In a second group of cases the disease presents itself with the characteristics of *maniacal stupor* (Kraepelin). The psychic paralysis is associated with more or less pronounced excitement: the patient is constantly moving, disarranges his bed, tears his clothes, soils the walls of his room, and at the same time shows such complete intellectual obtuseness that even the simplest questions put to him remain unanswered.

Finally, in a third group, inhibition is less pronounced, and the elated mood of mania is replaced by an uneasy, gloomy, irritable one, the basis of which is sadness, like in the depressed type.

The mixed type sometimes persists through the entire duration of the attack. More frequently it is met with in the transition-periods of circular insanity, where the patient wavers, so to speak, between excitement and depression.

Attacks of double form. — Each attack is here constituted by *two periods:* a period of depression and a period of excitement. It usually begins with the depression.

The transition from depression to excitement occurs either suddenly, — a patient goes to bed a melancholiac and rises the next morning a maniac, — or gradually, with an intervening period of the mixed form of manic depressive insanity, as mentioned above. The psycho-

[1] Kraepelin. *Loc. cit.*, p. 545.

motor inhibition gradually becomes less prominent and is replaced by excitement; flight of ideas and logorrhœa appear. Finally the sadness disappears and maniacal elation replaces it.

When a maniac falls into depression the same transition occurs inversely.

The *treatment* of each phase comprises the same indications as for attacks of simple depression and of mania respectively.

§ 4. General Course. — Prognosis of Manic Depressive Insanity. — General Considerations. — Treatment.

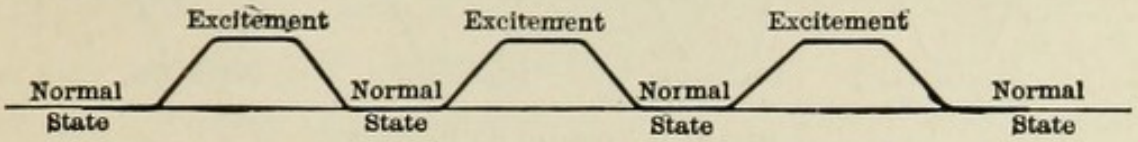
Attacks of manic depressive insanity present a very marked tendency to recur. According to the particular forms assumed by the successive attacks, several types of manic depressive insanity are distinguished.

(A) Periodic insanities:
  (*a*) Recurrent mania;
  (*b*) Recurrent melancholia.
(B) Alternating insanity.
(C) Insanity of double form.
(D) Circular insanity.
(E) Irregular forms.

(A) **Periodic insanities.** — (*a*) *Recurrent mania.* — The attacks are always of the maniacal type and are separated from each other by normal periods. The number of attacks and the duration of the normal periods vary greatly. Some patients have but two or three attacks during their lifetime; it is altogether exceptional for an individual to have but one attack, at least if his life

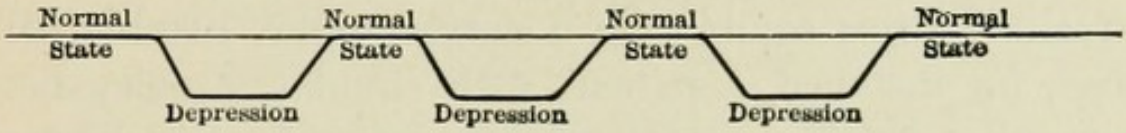
is a long one. In all likelihood non-recurring mania does not exist.

In other cases the attacks follow each other at brief intervals and with a certain regularity.



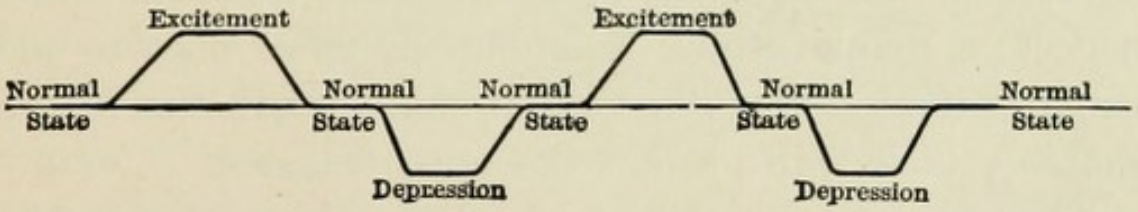
SCHEME I. RECURRENT MANIA.

(*b*) *Recurrent melancholia.* — Less frequent than the preceding, this form is, so to speak, its counterpart. What has been said about recurrent mania is applicable to recurrent depression.



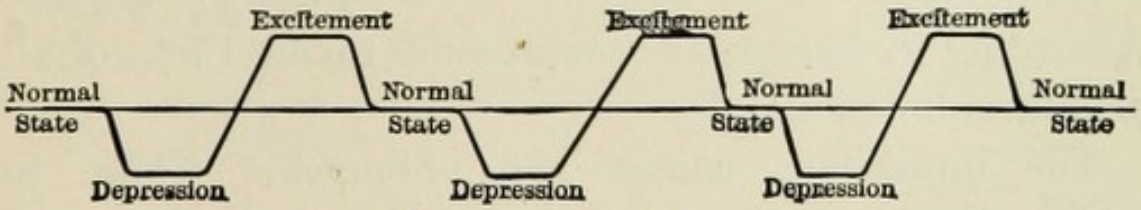
SCHEME II. RECURRENT MELANCHOLIA

(B) **Alternating insanity.** — Attacks of mania and those of depression alternate and are separated from each other by normal intervals.



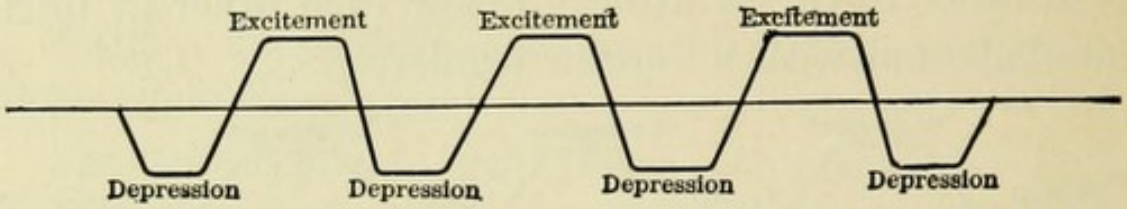
SCHEME III. ALTERNATING INSANITY.

(C) **Insanity of double form.** — Each attack consists of a period of depression and one of excitement; the attacks are separated from each other by normal intervals.



SCHEME IV. INSANITY OF DOUBLE FORM.

(D) **Circular insanity.** — Attacks of double form follow each other without interruption.



SCHEME V. CIRCULAR INSANITY.

(E) **Irregular forms.** — These are the most frequent. The attacks follow each other without order or regularity, assuming at random the depressed, manic, or mixed form.

Finally, one may observe the periodic, circular, and irregular forms combine in a very complex manner, so that, for instance, a patient with circular insanity becomes a periodic maniac for a time, or a patient whose previous attacks have all been of the manic type presents an attack of depression.

It is quite frequent, though not constant, to see attacks of the same type present each time the same aspect: a manic attack resembles previous ones in the same patient, and it is very probable that the future manic attacks will present the same features.

The **general prognosis of the disease** is not favorable. The attacks have in the majority of cases a tendency to come closer together, so that the normal intervals become gradually shorter and shorter until they are either totally wanting or almost so.

Manic depressive insanity is a common disease. According to Kraepelin it represents about 15 % of all asylum admissions.

The immediate **causes** are unknown. Those to which the patients or their relatives attribute the

attacks are usually unsubstantiated. It seems to be established that *heredity* is very frequent. Kraepelin has found it in 80 % of the cases. It is often similar. One point is certain: manic depressive insanity is a disease of the degenerate. Vague as this conception of the etiology is, we must be content with it for the present for want of a better one.

[Leaving aside the question of its manner of origin, — whether hereditary, or merely congenital, or due to environment, — the special predisposition to have attacks of manic depressive insanity seems to be observed with particular frequency in persons of certain fairly well defined mental make-up; such make-up is characterized either by a sort of constitutional pessimism, gloomy or worrisome disposition, or, on the contrary, by a happy, exuberant, demonstrative temperament, or, finally, by emotional instability consisting of exaggerated reactions to situations by despair, discouragement, or by premature and unwarranted display of triumph and hopefulness, as the case may be. This was pointed out by Hoch[1] who has emphasized particularly the contrast which such personalities present to that type of personality — the "shut-in personality" — which he has defined as being particularly prone to develop dementia præcox.[2] In a more recent and elaborate study Reiss has arrived at similar conclusions, as may be seen from the following quotation:[3] "Upon a survey of the whole

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[1] Journ. of Nerv. and Ment. Dis., Apr., 1909.

[2] See p. 255.

[3] Eduard Reiss. *Konstitutionelle Verstimmung und manisch-depressives Irresein.* Zeitschr. f. die gesamte Neurol. u. Psychiatrie, Vol. II, p. 600, 1910.

material which has been at my disposal, we find as a general fact that in cases of happy disposition manic states, while in those of pronounced depressive disposition the sad melancholy states predominate."]

The *age* at which the first attack occurs is not constant. In most cases it is before the twenty-fifth year, in some before the tenth, and in others after the fiftieth. Quite frequently in women the disease appears with the onset of menstruation or with the first pregnancy.

Diagnosis. — The principal elements of diagnosis are: psychic paralysis associated with the special symptoms of exaltation of the mental automatism, which have already been described; absence of real intellectual enfeeblement; recurrency of the attacks with *restitutio ad integrum* after each.

We differentiate:

General paresis by the pathognomonic intellectual enfeeblement, a certain degree of which persists even during the remissions; and by the equally pathognomonic physical signs;

Involution melancholia by the intense and persistent psychic pain, which is much more marked than in the depressed form of manic depressive insanity;

Acute confusional insanity by its special etiology, and by the much more marked disorientation;

Delirium tremens by its specific hallucinations;

Dementia præcox by the rapid and pronounced diminution of affectivity, by the catatonic phenomena which are so frequent in such cases, and by the absence of flight of ideas even in those cases which closely resemble mania.

Homogeneity of manic depressive insanity. — Fundamental symptoms. — The conception of manic depressive

insanity is due to Kraepelin and constitutes one of the most important recent advances in psychiatry. Although the grouping of such apparently different and even opposite pathological states as melancholic depression and mania may appear unreasonable on superficial consideration, its legitimacy is nevertheless incontestable and is based upon two principal arguments:

(1) The existence of certain *fundamental symptoms* common to all forms, manic, depressed, or mixed.

(2) The *alternation*, regular or not, as the case may be, of the phenomena of *excitement and of depression in the same subject.*

(1) *Fundamental symptoms.* — The symptoms of manic depressive insanity can be readily divided into two groups.

The *first group* comprises all the morbid phenomena dependent upon *psychic paralysis*, namely: (*a*) weakening of attention; (*b*) sluggish formation of associations of ideas; (*c*) insufficiency of perception; (*d*) pathological indifference.

These symptoms of psychic paralysis are especially prominent in the depressed type. But in mania, though usually marked by phenomena of exaggeration of the mental automatism (flight of ideas, motor excitement), they are, nevertheless, also present, as can be readily shown by a careful examination.

Let us consider these symptoms individually.

(*a*) *Weakening of attention.* — Abnormal mobility of attention is one of the fundamental symptoms of mania. Yet, as shown in the first part of the book, this is but a manifestation of weakening of attention.

(*b*) *Sluggish formation of associations of ideas.* —

Kraepelin[1] and his pupils have shown by means of psychometry that the acceleration of mental processes in mania affects only the automatic processes, voluntary associations of ideas being actually retarded, just as they are in the depressed states.

(*c*) *Insufficiency of perception.* — Perception of the external world is inaccurate in depression as well as in mania; but while in the former case the perceptions are often incomplete and are manifested clinically by *uncertainty*, in the latter case automatic associations occur in the place of missing normal ones and give rise to false perceptions or *illusions*. Neither the melancholiac nor the maniac perceives the phenomena of the external world in their true aspect, but the one remains in doubt while the other affirms errors.

(*d*) *Pathological indifference* also clearly exists in the maniac as well as in the melancholiac. To be convinced of this, it suffices but to recall the perfect serenity with which the maniac receives news of a misfortune in his family which, in the normal state, would profoundly distress him.

Psychic inhibition expressed by the above four symptoms is, therefore, the fundamental and constant disorder which is the common basis of the diverse clinical types of attacks of manic depressive insanity.

The symptoms of the *second group* are dependent, not upon psychic inhibition, but upon exaltation of the mental automatism, which so often accompanies it. The principal symptoms of this group are: (*a*) Flight

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[1] *Psychiatrie*, Vol. II, p. 504. On the subject of measurement of the rapidity of the associations in the insane, particularly in circular insanity, see also Ziehen's contribution in Neurol. Centralbl., 1896.

of ideas; (*b*) irritability; (*c*) impulsive reactions; (*d*) delusions and psycho-sensory disorders; (*e*) fixed ideas and, occasionally, imperative ideas.

All these morbid phenomena are incidental. Their presence or absence modifies the *aspect* but not the *nature* of the attack. Some appear with equal frequency in mania and in melancholia; namely, delusions and hallucinations. Others are, on the contrary, peculiar either to the one or to the other of these states: flight of ideas, irritability, impulsiveness to mania, fixed ideas to melancholia. But there is no absolute rule in this respect; we meet with depressed cases with flight of ideas, and with cases of mania in which the delusions are more or less fixed.

(2) *Alternation of excitement and depression in the same subject.* — The close relationship existing between states of depression and maniacal states becomes still more evident when, instead of considering a single attack, we make a study of all the attacks of one individual. First of all, it is extremely rare for a patient to have only one attack of mania or of melancholic depression in his life. Thus isolated and non-recurring mania or melancholic depression is almost eliminated. In some cases, it is true, the attacks are always manic, while in some others they are always depressed. These two groups, apparently separated by an unfathomable abyss, are in reality connected by a much larger group of double, alternating, circular, and irregular forms, which establish an insensible transition from the one to the other. Moreover, a close study of cases shows that the majority of attacks presenting the manic type or the depressed type are in reality attacks of double

form. In fact, on careful inquiry we find that almost constantly maniacal symptoms are preceded by a prodromal period characterized by more or less marked depression; again, we often find an attack of depression to be followed by a state of excitement which cannot be attributed to any known cause, not even to the patient's prospect of returning to his usual mode of life in the near future. Thus all attacks of mania and of melancholic depression contain in a rudimentary form the elements of excitement and of depression. Circular insanity thus becomes the prototype from which the other types are derived.

The above considerations show us that, in spite of the apparent diversity of the symptoms, mania, melancholic depression, and their various combinations are not to be considered, as heretofore, as different morbid entities, and that the following conclusion arrived at by Kraepelin is perfectly justifiable:

"The diverse forms which have been described are but *different manifestations of one and the same fundamental pathological process, equivalents,* like the many forms assumed by epileptic paroxysms." [1]

[**Treatment.** — For the treatment of the symptoms which may arise in the different phases of manic depressive insanity the reader is referred to the general discussion of the treatment of insanity in the first part of this book. As to the question of prevention of recurrency an important point to bear in mind is the necessity of insisting upon absolute abstinence from all forms of alcoholic beverages. A single drink of

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[1] Kraepelin. *Psychiatrie,* 7th edition, Vol. II, p. 558.

whiskey has been known to act as the undoubted cause of an attack in a manic depressive individual, and there are some cases in which most of the attacks are attributable to overindulgence in alcohol.

An attempt has been made by Kohn to prevent the recurrency of attacks in cases in which the outbreaks are brief and frequent and occur with such regularity that the date of their onset can be predicted with more or less accuracy. In such cases, beginning several days before the expected attack, the patient is given from 12 to 15 grams of sodium bromide daily until the "danger period" is over, when the dose is gradually diminished and the drug finally discontinued. It often seems possible to prevent the outbreaks of excitement by this method of treatment.]

§ 5. Chronic Mania.

The diagnosis of chronic mania was but a few years ago one of the most common in psychiatry. To-day there can be no doubt that many cases formerly thus labeled belong to excited forms of dementia præcox, particularly catatonic excitements: many, but not all. Chronic mania, though rare, certainly infinitely more rare than was believed by older authors, constitutes none the less a reality. Cases exist presenting all the symptoms characteristic of the manic state — flight of ideas, excitement, morbid irritability, pressure of activity, etc. — and in which these symptoms, instead of being intermittent, become established in definitely chronic fashion.

Chronic forms are seen chiefly in elderly subjects, for the most part after the age of sixty years. They are often associated with a certain degree of intellectual en-

feeblement of which it is impossible to say whether it is directly dependent upon the manic state or whether it constitutes a deterioration of senile origin superimposed somehow upon the manic state. When we consider that in classical manic depressive insanity even severe and repeated attacks leave no marked intellectual enfeeblement the second assumption appears more logical.

It is exceptional for a chronic manic state to be installed as such from the beginning. More often it follows one or several attacks of ordinary manic depressive insanity ending in recovery. The patient has one, two, three attacks from which he recovers completely; then comes on another attack in every way resembling the previous ones; the excitement subsides somewhat, periods of relative calm occur at intervals; recovery seems to be approaching; but the condition continues indefinitely and it finally becomes apparent that the acute maniac has become a chronic maniac. At times the chronic state is marked by extreme weakness of attention; this was observed in the following case, the history of which I shall review briefly, and which may serve as a general type from several points of view.

Mrs. C. J., two of whose cousins are insane, was born in 1844. In 1869, that is to say, at the age of twenty-five years, following a confinement, she had an attack consisting of a period of depression and one of excitement, the whole attack lasting eighteen months. She recovered and remained well until 1891, when, without apparent cause, she had another similar attack from which she recovered at the end of two years, following a surgical operation upon the uterus. In 1901 a third attack: period of depression lasting several months, later, following a trip on which she was taken for diversion, sudden appearance of the manic state. Another surgical operation upon the uterus was tried, but without any result. Since 1901 excitement, flight of ideas, and logorrhœa have persisted with intervals of

lucidity which gradually become rarer and shorter. These intervals, which at first lasted several days, have not lasted longer than one or two hours during the first half of 1908. At the present time (September, 1908) they hardly exceed half an hour and, as I have already mentioned, they are notably more rare than during the first year of the disease. Morever, even in the moments of lucidity which still occur from time to time a certain degree of intellectual enfeeblement is observed. Affectivity is reduced, recollections are lacking in precision, attention is fixed with some difficulty, and orientation of time is defective. There seems to be no doubt that we are here dealing with a state of chronic mania with slight intellectual enfeeblement. The most pronounced disorder, the one which especially characterizes the case in question and distinguishes it from attacks of manic depressive insanity such as one is accustomed to seeing, is an extreme weakness of attention, a weakness which is out of all proportion to the motor excitement and which makes it impossible to obtain a sensible reply even to the simplest questions, while at the same time it is easy to obtain relative psychomotor calm, sufficient, for instance, to keep the patient seated in a chair.

CHAPTER XIII.

PARANOIA.

PARANOIA is to be looked upon as the development of a morbid germ the existence of which manifests itself in early life by anomalies of character. These anomalies may be, to use the apt expression of Séglas, "summarized in two words: conceit and suspicion." At a certain time the pathological tendencies of the subject find their expression in a fixed idea, and the delusional state is established.

Onset. — Sometimes it is slow and gradual, much more frequently rapid, almost sudden.

In the first case the dominant traits of the personality become accentuated little by little. The patient grows more and more suspicious and vain and believes himself to be the object of malevolent or, on the contrary, admiring reflections. Delusional interpretations become more and more numerous until finally the *fixed idea* appears, an idea of persecution or of grandeur, around which a whole delusional system is subsequently built up.

In the second case the fixed idea is primary in relation

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[1] Leroy. *Les persécutés persécuteurs.* Thèse de Paris, 1896. — Ballet et Roubinowitch. *Les persécutés persécuteurs.* — Magnan. *Leçons cliniques.*

to the delusional interpretations. Sometimes the fixed idea appears in childhood, as in a case of Mangan's: the boy when questioned concerning his vocation replied that he was going to become a pope. Sander has described this form under the name *paranoïa originaire.*

Usually the fixed idea appears at a later period, in youth or in adult age. Often it is based upon some real fact the significance of which the patient misinterprets or the importance of which he exaggerates: perfectly justifiable disciplinary measures to which he is subjected, loss of money, or sometimes, indeed, a true injustice, against which, however, nothing can be done, may determine the onset of the disease. Often, also, it has for its basis the extreme credulity of the patient, who takes in earnest a simple pleasantry or some idle remark. "He resembles Napoleon," was once remarked by some one in the presence of a psychopath. Immediately the latter conceived the idea that he belonged to the royal family and that he was "the Master of France," and this formed the starting point of his system of delusions.

Fundamental features of the disease. — As soon as the theme, that is to say the fixed idea, is formed, the disease develops very rapidly and is characterized by:

(1) The immutability of the basic fixed idea;

(2) The absolute faith which the patient has in his delusions;

(3) The *apparent* logic of the delusional system;

(4) The promptness and intensity of the reactions;

(5) The absence or at least extreme rarity of hallucinations and the presence of numerous false interpretations;

(6) The absence of mental deterioration regardless of the length of time that the disease has lasted.

The following brief abstract from the history of a case illustrates these characteristics in a somewhat schematic fashion.

A schoolmaster, who was a man of average intelligence, but suspicious and conceited, failed to receive a promotion which he believed he had a right to expect. The idea that he was the victim of a grave injustice arose in his mind and never left it (*immutability of the fixed idea*). The reasonings of his friends and relatives could not alter his conviction and failed to dissuade him from addressing a letter of strong protestation to the school director (*absolute faith in his delusions, promptness and intensity of the reactions*). This producing no effect other than the loss of his position, he applied to the minister of public instruction, to the president of the republic, to the tribunals. He found no justice, but nevertheless retained confidence in the excellence of his cause, attributing his successive disappointments to dishonesty of the representatives of authority and justice, who he claimed were in league against him because his high intellect overshadowed them. Everything now became clear to him; he understood the distrust shown towards him and the attention which he attracted wherever he went (*apparent logic of the delusions, false interpretations*). Finally committed, he continued to protest against his persecutors, among whom were included, as might be expected, the physician who treated him and the police officer who arrested him; the memory still remains perfect and the mind lucid, although the disease has now lasted over 25 years (*absence of mental deterioration*).

It is often stated that the delusions of paranoiacs are, in a manner, logical; that is to say, when the fixed idea once appears the secondary delusional conceptions are the natural outcome. Thus presented this statement is not correct. In fact, if these patients possessed a faultless logic it would render apparent to them the inconsistency of their fixed idea, which would be immediately abolished. It is quite true that these

patients are very apt to use and abuse deductions and syllogisms, which trait has gained for them the name of the *reasoning insane*. But their logic is only apparent; their reasoning is always tainted with the same original vice that leads them to the systematic rejection of arguments opposing their ideas, and the ready acceptance of hypotheses which arise in their minds as a result of their pathological preoccupations. Hence their delusional interpretations, which become more numerous each day and upon which they base their arguments, and the childish character of the proofs which they accumulate. A vague word or an evasive reply often suffices to convince them that their point of view has been adopted and that their cause has been accepted. The concessions occasionally made by those against whom their delusions are directed, become, in their eyes, ample proof that these people admit their guilt; thus misinterpreted chance occurrences serve to feed the system of delusions.

Quite frequently their reasoning, subtle and plausible, though radically false, is imposed upon suggestible individuals or upon those of shallow minds. Thus they often have defenders who show more zeal than intelligence. The history of the famous Sandon presents such an example.

Forms. — "According to their special morbid tendencies paranoiacs may be classed in different groups: the *litigious paranoïacs* (*paranoïa querulens* of the Germans), who prosecute their imaginary rights in the courts; the *hypochondriacal paranoïacs*, who, believing themselves to have been once improperly treated by a physician, bear a grudge against all physicians whom

they may meet in the course of their treatment, and annoy them in various ways; the *filial paranoiacs*, who believe that they have found their father in some stranger, whom they constantly annoy with their expressions of tenderness and with their claims. Another group is formed by the *amorous paranoiacs:* Teulat, the lover of Princess de B——, was a splendid example of this type." (Magnan.)

To the preceding groups should be added the *jealous paranoiacs*, in whom the delusions assume the form of morbid jealousy; *inventors* who are indignant for the rejection of their fantastic inventions;[1] *mystics* and *founders of religions* who often succeed in gathering beneath their banners an imposing train of feeble-minded, or at least unbalanced, individuals, etc.

The list might be prolonged indefinitely; it is useless, however, for whatever be the nature of the fixed idea, the clinical characteristics of the delusional state do not vary.

Diagnosis. — The first question that may arise in the mind of the physician is, Are the ideas of the subject *delusional* or not? It is not always easy to answer this question. Delusions sometimes appear very probable, while, on the other hand, well-based claims may resemble the delusions of reasoning insanity on account of the obstinacy with which they are urged. Only by a very careful examination of each case can errors be avoided.

The diagnosis is to be based upon the fundamental characters enumerated above; all these characters in combination are not observed in any other psychosis.

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[1] Delarras. *Contribution à l'étude du délire des inventeurs.* Thèse de Bordeaux, 1900.

In favor of *paranoid dementia* are mental deterioration and the more mobile character of the delusions. In *chronic delusional insanity* there are the constant presence of hallucinations and a progressive evolution of the disease. In the *alcoholic delusion of jealousy* we find less perfect systematization, the constant presence of hallucinations, the stigmata of alcoholism, and the tendency towards recovery.

Prognosis and treatment. — Reasoning insanity is a chronic, incurable affection which, as we have seen, entails no mental deterioration.

The violence of the reactions almost always renders commitment necessary. There are no known means for combating the delusions. Psychic treatment has no influence whatever.

CHAPTER XIV.

CONSTITUTIONAL PSYCHOPATHS.

SEXUAL PERVERSION AND INVERSION.—OBSESSIONS.

§ 1. Constitutional Psychopaths.

Among degenerates there are some who present from their childhood evident psychic anomalies which justify their being classed in a separate group, — the constitutional psychopaths.

From this group must be eliminated epileptics, hysterical subjects, paranoiacs, and the feeble-minded, which, in spite of their close relationship to the psychopaths, really form independent categories. Such distinctions are necessary for the avoidance of confusion in the theory and practice of psychiatry.

We shall study first the habitual mental state of psychopaths, then the anomalies of sexual life, which on account of their importance merit a separate description, and finally obsessions.

§ 2. Habitual Mental State of Psychopaths.

The principal anomalies are those of (*a*) judgment, (*b*) the character, and (*c*) conduct.

(*a*) *Disorders of judgment.* — These constitute perhaps the most essential stigma of the psychopath as well as the most important one from the social standpoint.

The psychopath *does not see things in their proper light*, hence his singular notions, his paradoxes, his ridiculous enterprises.

Usually he presents a more or less pronounced state of mental debility, weakness of attention or of memory, sluggish formation of associations of ideas, and poverty of imagination. In some cases, however, some of the faculties are normal or even brilliant: memory, imagination, or artistic aptitudes. But these abilities cannot be turned to account by reason of the lack of judgment, for almost always, if he is not actually feeble-minded, the psychopath is at least mentally unbalanced.

(*b*) *Anomalies of the character.* — These are very varied. Sometimes they consist in a general pessimism: the patient sees only the dark side of life; all occurrences make a painful impression upon his mind.

Usually the dominant note in the character of the psychopath is *extreme mobility of the emotions*. The subject passes alternately from exuberant joy to boundless desolation, from feverish activity to profound discouragement, from affection to hatred, from the most complete egoism to the most exaggerated generosity and devotion. Thus the name *unbalanced* is perfectly applicable to this class of patients.

(*c*) The *conduct* shows insufficiency of judgment and instability of the emotions. It is full of contradictions.

The psychopath is apt to pose as a champion of justice, as an avenger of humanity. He is given to anarchistic ideas, seeks to interfere in public affairs, to become a leader of popular movements, — and he succeeds but too often. His conduct is often incon-

sistent with his ideas of justice and charity, though he fails to see it himself. Theoretically he strives for the good of the universe, practically for the satisfaction of his own egoistic tendencies.

He tries all sorts of occupations, but succeeds in none, and accuses his fate or the injustice of men. He is apt to pose as a victim, while in reality he is what is aptly designated by the popular expression "a ne'er-do-well." If he has no personal resources and if he is not aided by his relatives or by public charity he becomes a *vagabond.*

The psychic anomalies are almost constantly associated with physical ones, which are known as the *physical stigmata of degeneration.* Most of these abnormalities may be encountered in normal individuals. Only the combination of many of them in the same subject renders them of importance; they are more numerous among the insane than among normal individuals; further, they are more numerous in constitutional psychopaths, epileptics, and hysterical individuals than they are in other degenerates. They possess a great theoretical interest because they are, so to speak, the stamp of degeneration, and are a proof of the fact that the morbid process affects the entire organism. On the other hand, they are not of very great practical interest; therefore I shall limit myself to the mere mention of the principal ones.

Cranial malformations: macrocephaly, microcephaly, scaphocephaly, extreme brachycephaly or dolichocephaly, etc.; cranio-facial asymmetry, harelip, malformations of the palate; dental anomalies: congenital absence of one or several teeth, irregularities of implantation,

malformations (Hutchinson's teeth); anomalies of the auricle: defective lobule, abnormal development of the Darwinian tubercle, absence of the helix; irregular pigmentation of the irides, strabismus; malformations of the external genital organs: cryptorchydism, infantilism, hypo- or epispadias, pseudo-hemaphroditism; anomalies of the length of the limbs: oligodactylism, etc.

Together with the anatomical anomalies should be ranged the numerous tattooings with which many psychopaths are covered, and which usually indicate a morbid mental state.

Tattoo-marks, so frequently observed among the insane and among criminals, are a sort of acquired sign of degeneration.[1]

§ 3. Anomalies of Sexual Life.[2]

We usually distinguish:

(A) Anomalies of degree; eroticism; frigidity.

(B) Anomalies of nature: sexual perversion; sexual inversion.

(A) **Anomalies of degree.** — *Eroticism* results in venereal excesses and often in indecent acts and attempts of rape.

Sexual frigidity consists in an indifference and even an aversion of the subject to sexual connection; at least to normal sexual connection, for frigidity may be associated with sexual perversion or inversion. A curious and apparently paradoxical fact is its frequency among prostitutes.

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[1] Martin. *Les tatouages chez les aliénés.* Thèse de Paris, 1900.

[2] Krafft-Ebing. *Psychopathia Sexualis.*

(B) **Anomalies of nature.** — (*a*) *Sexual perversion* consists in the abnormal character of the conditions necessary to excite sexual desire and sometimes its gratification. Its most common forms are *masturbation, fetichism, exhibitionism, sadism, masochism, bestiality* and *necrophilia.*

Masturbation is very frequent in psychopaths. Often appearing very early, it is to be regarded as a sign and not as a cause of degeneration, though in all probability it accentuates already existing defects.

Fetichism occurs almost exclusively in men; it is an anomaly in which sexual excitement and sometimes even gratification of the sexual desire, accompanied by ejaculation, are produced by the sight or contact of certain objects, or of certain parts of the female body other than the genital organs.

Fetiches may be (α) various objects: articles of clothing (gowns, petticoats, handkerchiefs), toilet articles, laces, expensive fabrics, in a word, all objects used by women; (β) parts of the body: the breasts, the hands, the feet, the hair. Several fetiches may be associated in the mind of the same patient.

Moll has justly remarked that the mere fact that an individual has a predilection for some portion of the female body does not in itself constitute fetichism. "One may like by preference a pretty mouth, light or dark hair, or large eyes, without having any genital perversion." Similarly a letter or an object belonging to a woman may produce an agreeable impression by the recollections which it gives rise to. An anomaly is present only when the presence or mental representation of such objects is in itself efficient and provokes

sexual excitement without giving rise to any recollection of any particular woman.

Fetichism often appears at the time when normally the sexual instinct becomes manifest. The choice of the fetich depends upon the impression which is accidentally associated with the first genital excitement. While in the normal individual this accidental association leaves no trace, in the fetichist the impression and the excitation form an indissoluble combination, so that the first invariably brings about the second.

The desire to possess the fetich is sometimes so intense as to lead the patient to thefts or to various peculiar acts. One patient of Vallon's was arrested while cutting bits of cloth from the dresses of women who were with him at the time in a newspaper office. Most of the so-called hair despoilers are hair fetichists.

Exhibitionism has already been defined.[1] It may be met with in dements and in epileptics, and often takes the form of an impulsive obsession.

Sadism consists in a sense of voluptuousness derived from suffering which the patient witnesses or inflicts upon his victim. This sense is almost always associated with a state of genital excitation. As is the case with most sexual anomalies, it is more frequent in men.

History contains terrible examples of sadism. Such is that of Marshal Gilles de Rays, who, during a period of eight years, assassinated over eight hundred children,[2] subjecting them previously to defilement and torture. The exploits of the too-well-known Vacher are still fresh in the memories of most of us.

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[1] See p. 336.

[2] Quoted by Krafft-Ebing from Jacob, the historian.

Sadism is exercised chiefly upon women and upon children; more rarely upon animals.

Many sadists content themselves with simulation of suffering or with fictitious humiliation inflicted upon their pseudo-victim. The sadism is then *symbolic* (Krafft-Ebing).

Masochism, unlike sadism, is more frequent in women. It consists in an abnormal pleasure which the subject derives from his or her own suffering or humiliation. To this category belong the individuals who request women to strike and insult them and in whom sexual excitation cannot be produced otherwise.

Bestiality consists in an impulse to copulate with animals. Like all genital impulses it often assumes the shape of an imperative idea which the subject can in some cases resist by an effort of the will or by various curious subterfuges. Magnan cites a case of a young girl who, seized with the idea of having connection with a dog, escaped the morbid impulse by turning her attention to another animal.

Necrophilia is the rarest of all forms of sexual perversion. It consists in a particular pleasure which the subject experiences from the sight or contact of a cadaver. Often, but not always, this is accompanied by an impulse to defile the corpse.

(*b*) *Sexual inversion* consists in a contrast existing between the *physical sex* and the *psychic sex:* the subject presents the sexual tendencies of the opposite sex.

Much more frequent in men than in women, sexual inversion often, but not always, leads to pederasty. Sexual inversion is always congenital. The anomaly

is stamped upon the entire psychic and even physical personality of the subject.

Many of these individuals have the character and tastes of the opposite sex. The little boy plays with dolls, and finds pleasure only in the society of girls. Later on the same feminine tendencies persist, and the patient secretly abandons himself to them. We also often meet with men, apparently normal, who in their privacy dress themselves in female attire, cover themselves with laces, or passionately indulge in feminine employments, as sewing, embroidery, etc.

Physically certain anomalies are noted which resemble the normal characteristics of the feminine organism: considerable development of the breasts and hips, absence of the beard, rounded shape of the neck, etc. Occasionally we observe a more or less marked degree of pseudo-hermaphroditism.

The opposite anomalies are encountered in the female sexual invert: masculine features, beard, masculine voice, etc.

Some inverts may have normal sexual intercourse, but they derive no satisfaction from it, and always feel an attraction for the homologous sex; often they marry, hoping thus to cure their infirmity, but their attempt is never successful.

§ 4. Obsessions.[1]

An obsession consists in an *imperative idea associated with a state of anxiety, there being no marked disorder of consciousness or judgment.*

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[1] Arnaud. *Sur la théorie de l'obsession.* Arch. de neurol., 1902, No. 76. — Roubinowitch. *Étude clinique des obsessions et des im-*

We have already studied imperative ideas and learned that they constitute a form of mental automatism.

We have also studied the principal characteristics of anxiety. Its relations to imperative ideas have been much discussed. Westphal, who was one of the first to make a thorough study of obsessions, is of the opinion that the anxiety is *always secondary* to the imperative idea. This opinion is certainly too absolute, for anxiety may precede the imperative idea and even appear independently of it.

Ribot, Freud, Pitres, and Régis have insisted upon those cases of diffuse anxiety, or *panophobia*, in which the emotion exists independently of any fixed idea.[1]

This question seems to be analogous to that which we have considered in connection with allopsychic disorientation and hallucinations. I am inclined in this case to view with favor a similar solution, namely, that imperative ideas and anxiety are two manifestations of the same fundamental psychic disorder.

Intact consciousness and judgment are, as we have just pointed out, the rule in obsessions; the patient is therefore able to realize the pathological nature of his phenomenon. There are, however, some exceptions to this. The subject has sometimes, when his anxiety reaches its height, a sense of a reduplication or of a transformation of the personality. One such patient of Séglas entered a shop " to speak to the clerks, to ask

pulsions morbides. Ann. méd. psych., Sept.-Oct. 1899. — P. Janet. *Les obsessions et l'anasthénie,* 1902, Paris, F. Alcan.

[1] Freud. *Obsessions et phobies.* Rev. neurol., 1895. Manaud. *La névrose d'angoisse. Troubles nerveux d'origine sexuelle.* Thèse de Lyon, 1900. P. Londe. *De l'angoisse.* Rev. de méd., 1902, Aug.-Oct.

for something and thus to find new proof that she was her real self."

Obsessions are occasionally accompanied by *hallucinations*, chiefly motor hallucinations, which in a manner *exteriorize* the imperative idea.

Obsessions are of various forms. First of all, three great classes are to be distinguished, depending upon the influence which the imperative idea exercises upon the patient: (1) intellectual obsessions, which are unaccompanied by any voluntary activity; (2) impulsive obsessions, in which the idea tends to be transformed into an act; (3) inhibiting obsessions, the action of which tends to paralyze certain voluntary acts.

(1) **Intellectual obsessions.** — The consciousness of the patient is occupied either by some concrete idea, — a word, an object, an image of some person or of some scene, —or by some abstract idea, often of a metaphysical nature. To the latter category belong the obsessions in which the subject has a feeling that he does not exist, that the external world is formed of nothing but phantoms, etc. The imperative idea is then said to have a negative form. In other instances, without going as far as complete negation, it is expressed by doubt, thus constituting a transitional form between intellectual and inhibiting obsessions.

(2) **Impulsive obsessions.** — These are very numerous. The following are the principal forms:

Onomatomania: an irresistible desire to pronounce certain words, sometimes obscene words (coprolalia). Associated with a tic, *coprolalia* constitutes the " disease of convulsive tics " (the disease of Gilles de la Tourette).

Arithmomania : an irresistible desire to count certain objects, add certain figures, etc.

Kleptomania : a morbid impulse to steal objects which are entirely useless, or which the subject can easily pay for.

Dipsomania : an irresistible impulse to drink alcoholic beverages of every description (wines, liquors, eau-de-Cologne, spirits of camphor, etc.), occurring in a person of temperate habits, who may at other times have even an actual dislike for alcohol. The attacks may recur, and the dipsomaniac may become an alcoholic. He differs radically from the ordinary drunkard, however. "The one is alienated before beginning to drink, the other (the alcoholic) becomes alienated because of his drinking" (Magnan).

Pyromania. — Suicidal and homicidal impulses.[1] — These three obsessions are of equal gravity from a social standpoint and may be placed in the same group. The first consists in a morbid impulse to set buildings on fire; the other two require no definition.

In some cases the patients obey their fatal impulses. Vallon has reported a case of a young man who, having a homicidal obsession, struggled against the impulse, but was finally overcome and yielded.

Such cases, however, are rare. Usually the patients succeed by various, and at times singular, means in resisting their impulse. Many take flight at the moment of the paroxysm; others request to be restrained or held; still others voluntarily have themselves com-

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[1] Vallon. *Obsession homicide.* Ann. méd. psych., Jan.–Feb. 1896. — Carrier. *Contribution à l'étude des obsessions et des impulsions à l'homicide et au suicide.* Thèse de Paris, 1900.

mitted. One patient of Joffroy's, while walking in the street, was seized with the idea of throwing her child under the wheels of a passing car; she entered a wine merchant's shop, placed her child upon the counter, and took flight.

Similarly, it is very rare for patients to yield to a suicidal impulse. The means they make use of to escape their obsession are innumerable. A woman possessed by the idea of throwing herself out of the window had all the windows of her house protected with iron bars. Another such unfortunate condemned herself never to cross the Seine river to prevent herself from yielding to the impulse to drown herself.

As to family suicide, it is almost never the result of an obsession, but of a fixed idea which is developed by imitation.

(3) **Inhibiting obsessions.** — Like the preceding ones, these assume very varied forms.

One of the most frequent is the "*doubting mania.*" Its characteristic feature is the inability on the part of the patient to affirm a fact or to make a determination.

Many normal persons experience this phenomenon in a slight degree. At the borderland of doubting mania we find individuals who hesitate before mailing a letter, in spite of having already several times verified the contents, the address, the sealing of the envelope, adherence of the stamp, etc.

Doubt is likely to assume the form of *scruples*, so frequent in religious persons: a fear of profaning sacred objects, of not being in a holy state of mind, etc.

Closely related to doubting mania are the *phobias*,

which are usually groundless and sometimes ridiculous; their absurdity is recognized by the subject himself.

Some patients do not dare to touch any object, constantly wear gloves, wash their hands a hundred times daily, etc. This phobia, which includes also the fear of contracting an infectious disease through contact with contaminated articles (*nosophobia*), constitutes the "*delire du toucher.*"

Others have a fear of being unable to stand up or to accomplish certain movements, such as walking. "In a deserted place, in a very wide street, upon a bridge, in a church, or in a theater the patient is suddenly seized with the idea that he will be unable to cross the wide space before him, that he is going to die, or that he is going to be sick."[1]

This morbid phenomenon, known as *agoraphobia*, induces a veritable functional paralysis, and the patient may fall if he is not supported. The slightest support is sufficient to calm and reassure him; the origin of the attack is, therefore, purely psychic.

Claustrophobia is the opposite of agoraphobia; it consists in an inability on the part of the patient to remain in a closed space.

Erythrophobia, first described by Pitres and Régis, consists in a fear of blushing. These patients do not dare to attract anybody's attention to themselves, being sure to blush most distressingly. This phobia is closely related to ordinary timidity, of which it is occasionally a complication.

The following case shows a state of *panophobia* or *diffuse anxiety* combined with very pronounced *doubting*

[1] Régis. *Manuel pratique de Médecine mentale*, p. 279.

mania, manifesting itself by constant uncertainty and by moral and religious scruples. To use the very expressive terminology of Freud, the patient is in a state of permanent anxious anticipation which, at the occasion of the most immaterial and trifling occurrences, develops into an attack of anxiety.

Miss Margaret F., forty-three years of age, private teacher. Family history: father alcoholic. The patient is of normal intelligence. Disposition melancholy, but gentle and affectionate. The patient lived for twelve years with the same family, where she had inspired a true attachment for herself. She has had no serious illnesses, save frequent attacks of migraine.

The onset of the illness dates back to the fall of 1903. The young lady whom she had been teaching finished her education, and Miss F. had to take another position. This grieved her very much. She gradually grew sad, depressed, and became disgusted with everything. In *November*, 1903 (seven months after her change of position), she began to have all kinds of doubts: Has she said her prayers properly? Has she not made a mistake in asking the druggist for medicine? Feeling herself to be really ill she left her new position and went home to her parents. Her morbid preoccupations, however, persisted. Her general health was not very good. She lost considerable flesh in a short time. She was taken to a sanitarium on *January* 4, 1904.

An examination made on that day showed the following: Stature slightly below the medium. Constitution normal. No evident organic disease except a slight degree of emaciation. Lucidity perfect. Patient had a very clear realization of her own condition. She showed uneasiness with continuous agitation: walked up and down the room, shifted from one foot to the other, rubbed her hands in a nervous manner, looked around with a sort of apprehension, doing all this, she said, in spite of herself and without any definite idea. A few moments after her arrival doubts and fears made their appearance. She noticed a bottle of syrup on a table in her room. Immediately she began to wonder if she had not, without knowing it, poured something into the bottle, perhaps poison, or ink, or perfume. Later in the same day, also on the days which followed, new fears developed and the doubts

increased. The following is a transcript of some of the case notes from the records of this patient.

January 15. Patient, on receiving her mail, could not make up her mind to open it. The nurse opened it for her. The patient is afraid to sort her own linen or clothing. She begs the nurse to examine minutely every piece and to take her oath that no injurious powder has been found on the fabrics or on the bed linen. She knew that she had on her arrival at the sanitarium 121 fr. 75 cms. in her pocket-book, in fact she had written the amount down in her note book, yet she was in doubt. She had the nurse count the money over and finally, still doubting, decided to write to her mother asking whether this was the correct amount. In the evening she said her prayers, kneeling at the bedside, but insisted on a nurse being present all the time in order that she might have proof later on that she said her prayers properly.

January 17. Patient went to mass and had prepared three 10-centime pieces for the collection. But, contrary to her expectation, the collection tray went around only twice; there remained, therefore, one 10-centime piece. She passed the entire day in most painful anxiety, not knowing what to do with the ten centimes, asking herself whether they were really hers, or whether she had inadvertently taken them from the collection tray, or picked them up from a neighboring seat.

January 23. Patient fears she was disrespectful in her remarks to the physician. This is probably due to her being neglected, because no attention is paid to her complaints. But it is also her own fault that she is left to herself: perhaps she has not followed the doctor's advice, as she should have done. If one could only return the past! It may be, too, that she has not always done her duty toward her relatives; in that case her sufferings are but the punishment of heaven. On close inquiry it is found that the patient has no true self-accusations; the patient herself says that there is no real foundation for these ideas, but that they just force themselves upon her mind.

January 29. The patient was seized with fear at the idea of going up to her room alone to find a handkerchief. A nurse had to accompany her.

February 9. Patient decided to go out for a walk in the park; all the time she insisted on holding the nurse's hand, and still had to come back after a few minutes because, she said, she was very much afraid. "Afraid of what?" the nurse asked her. "I don't know. . . Has there not been an accident or a crime in the

park several days ago?" In spite of all assurance on the part of the nurse that nothing unusual had happened the patient could not be calmed but kept asking the physician, his assistant, and the nurse the same question over and over again.

February 15. At the table the nurse emptied a package of vichy salt into a glass of water. The patient was seized with great terror. "What was that white powder?" Vichy salt, they told her. "But has there not been some mistake? Is it not some kind of poison? Have not some particles of it fallen on my plate?" Everybody present assured her that she had no reason to be alarmed, that no mistake was possible, that at any rate her plate was too far for any particles from the package to have fallen on it, but all to no purpose; the entire luncheon hour and the rest of the afternoon was passed by the patient in the same state of anxiety.

February 25. Patient wanted to have all the salt cellars on the table emptied as they might contain something injurious.

February 26. Somebody, in relating a piece of news from the paper, made use of the word "accident." The patient uttered a cry. That was horrible, she declared, such words ought not to be uttered in her presence, they cause her such fear. Later it appeared that there was a whole list of words that she ought never to hear: crime, poison, death, thief, sanitarium, asylum, etc.

March 2. Patient was visited by a friend. She seemed to derive no pleasure from the visit, cried a great deal, and took no interest in the news her friend told her. At the supper table she suddenly remembered that it was a fast day and refused to eat any meat. She was offered some eggs, but hesitated a good half hour before accepting them. For her salvation she ought to be content with some peas. On the other hand, the doctor told her to eat meat, which, in fact, would be better for her health. Further, by taking the eggs would she not be depriving someone? Finally she decided, or rather it was decided for her, to have two boiled eggs. But she did not cease worrying and during the entire evening kept asking herself what she ought best to have done.

March 21. The patient was informed that her relatives had decided to take her home, which she had several times begged them to do. Instead of being pleased she became despondent. This may not be prudent, she is not yet cured, who will take care of her at home?

On the following day she was discharged from the sanitarium, unimproved.

Etiology.—The etiology of obsessions comprises two principal factors: neuropathic heredity and general asthenia of the organism. Thus we find in most of the victims of obsessions a more or less charged heredity associated with the action of debilitating causes, such as physical or mental overwork, pregnancy, lactation, abundant and repeated hemorrhages.

Obsessions are always dependent upon a pronounced neurasthenic state; thus we generally distinguish obsessions associated with congenital neurasthenia, and those associated with acquired neurasthenia, depending upon the preponderance of neuropathic heredity or of the debilitating causes mentioned above. This distinction is an artificial one, for the two groups are connected by an infinite number of intermediate forms.

Treatment.—The *physical* treatment consists chiefly in rest, outdoor life, reconstructive diet; the *psychic* treatment consists in hypnotic or simple suggestion. Simple suggestion is the preferable method of the two, as these patients usually derive little benefit from hypnotism.

CHAPTER XV.

EPILEPSY.

From a psychiatric standpoint epilepsy manifests itself by *permanent disorders* and by *paroxysmal accidents.*

Permanent intellectual disorders. — These impart to the epileptic personality a peculiar stamp and often lead one to surmise the existence of the neurosis independently of any medical examination. We shall consider separately *anomalies of disposition* and *intellectual disorders.*

(A) *Anomalies of disposition.* — These are always very marked. The following are the principal ones:

(1) Irritability and variability of moods, egoism, duplicity.

(2) Habitual apathy, sudden impulsive reactions, violent and at times terrible fits of anger.

(3) Lack of consistency between the patient's conduct and his ideas, more rarely abnormal stubbornness and tenacity: "Some celebrated men who are supposed to have been epileptics are more noted for their pertinacity than for the greatness of their conceptions." [1]

(4) Morbid religious fanaticism, not constant, but frequent, usually merely ostentatious, with more regard

[1] Féré. *Les épilepsies et les épileptiques*, p. 423.

for the rites, ceremonies, and customs, and without any influence upon the morality of the patient.

(B) *Intellectual disorders.* — Epileptics are *sometimes*, but not often, as claimed by some authors, men of great intelligence. Some hold prominent places in history, in literature, and in the arts: such were Cæsar, Napoleon, Flaubert, and others. Others, though in a more modest sphere, are honorable occupants of offices requiring a lucid intelligence and a sane judgment. These cases are, however, exceptional. Intellectual inferiority almost always forms a part of the clinical picture of epilepsy. Often it is *congenital*, for most epileptics are originally feeble-minded; in other cases it is acquired; the manifestations of epilepsy — crises, vertigo, delirium — exercise a harmful and lasting influence upon the intelligence. When sufficiently marked, the intellectual enfeeblement becomes *epileptic dementia*.

The degree of dementia depends in a measure upon the number and severity of the seizures. "It cannot be doubted that the stupor produced by major attacks is more marked than that resulting from minor ones; and it is certain, as is admitted by Legrand du Saulle, Voisin, Sommer, etc., that major seizures occurring at frequent intervals much more rapidly lead to dementia than do incomplete seizures." [1]

The two essential features of epileptic dementia are: (1) its irregularly *progressive* development, with aggravations following the seizures; (2) its being to a certain extent *remittent*, the intellectual enfeeblement

[1] Féré. *Loc. cit.*, p. 227.

becoming less marked as the intervals between attacks become longer.

Paroxysmal mental disorders. — These are either associated with, or replace, the epileptic seizures. We shall review briefly their principal forms.

(A) *Sensory and psychic auras.* — The first consist in hallucinations or illusions; the second "usually consist in a recollection of either a pleasant or an unpleasant character; perhaps a recollection of some person or of some important event in the patient's life."[1]

(B) *Unconsciousness accompanying the convulsive phenomena:* though most frequently complete, it is sometimes but partial, so that there may be:

(*a*) *Vertigo*, which is a dazzling sensation rather than true vertigo,[2] and which is sometimes, but not always, accompanied by falling and slight convulsive movements. Together with pallor of the face and subsequent anæmia, these phenomena constitute a rudimentary epileptic seizure.

(*b*) *Absence*, essentially characterized by a momentary suspension of all psychic operations. The patient suddenly becomes immobile, his gaze fixed, his expression vacant; the attack having passed, he resumes his work or conversation at the point where he left off. In some cases the patient continues automatically through the attack the work or the movement in which he happens to be engaged. A barber mentioned by Besson thus continued during his absences to shave his clients, performing his work just as skillfully as in the normal state.

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[1] Magnan. *Loc. cit.*, p. 6.

[2] Féré. *Loc. cit.*, p. 136.

Exceptionally the *absence* is prolonged for hours, days or even weeks. Féré rightly includes with these absences those peculiar states of obscuration which are known as *epileptic automatism*, during which the patient may execute complicated acts, such as taking a journey somewhere, stopping in hotels, etc., without retaining any recollection of them after the attack. Legrande du Salle has reported a curious example of such automatism: an individual who was at Havre when his attack began, found himself on the way to Bombay when he regained consciousness, totally ignorant as to where he was or how he came there.

These states resemble states of somnambulism, with which they may, in fact, coexist.

Automatism occurs not only in connection with epilepsy. Heilbronner, Schultze and others have shown that it is met with in most diverse affections: alcoholism, manic depressive insanity, imbecility, and possibly even in neurasthenia.[1]

(C) *Stupor following the seizures:* This is a constant phenomenon which constitutes in doubtful cases an important element of diagnosis (Samt). It varies in duration from several minutes to as many hours.

(D) *Delirium:* This is the gravest manifestation of epilepsy. Sometimes it accompanies a convulsive seizure; at other times it precedes or follows it; still at other times it takes the place of a seizure.

It begins with an accentuation of the disorders of the

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[1] Heilbronner. *Ueber Fugues und fugue-ähnliche Zustände.* Jahrbücher f. Psychiat. und Neurol., Vol. XXIII. — Schultze. *Ueber krankhaften Wandertrieb.* Allg. Zeitsch. f. Psychiat., Vol. LX, No. 6.

emotions and of the character. The patient becomes irritable, anxious, and the delirium establishes itself very rapidly, often within several minutes, and never taking more than a few hours for its development.

The fundamental features in the classical form are:

(α) Profound *clouding of consciousness*, with complete *disorientation* of time and place;

(β) *Anxiety* which is sometimes terrible; in some cases it gives rise to violent agitation;

(γ) Numerous *hallucinations*, combined so as to constitute complete scenes, associated with delusions of a painful nature;

(δ) *Purely automatic* and extraordinarily violent *reactions;* the extreme limit of this violence is known as *epileptic furor.* In this condition the patient often commits crimes of revolting brutality bearing the stamp of absolute unconsciousness. He kills indiscriminately strangers or his own children, riddles the corpse with thrusts of his knife, cuts off pieces and devours them. In some cases, which are rare but very important from the medicolegal point of view, the criminal act appears to be prompted by the usual sentiments of the patient.[1] *Suicide* is sometimes observed;

(ε) *Amnesia*, which is usually absolute, following the attack. All classical descriptions show that the patients are as a rule totally ignorant of the damage or of the crimes which they have committed. This rule, however, has some exceptions. The patient may have a recollection, most frequently very vague, of the acts accomplished by him during the attack. Three classes of cases

[1] Féré. *Loc. cit.*, p. 144.

may present themselves: (1) the subject may retain a complete or a partial recollection of the delirious period, which persists as an ordinary impression; (2) the recollection, present immediately after the attack, may be subsequently effaced, and the patient may deny facts which he previously admitted to be true; (3) inversely, the recollection, absent at the time when the patient comes to, may appear later on: the patient admits a fact which he previously denied. The recollections of epileptic delirium are thus similar to those of ordinary dreams. We may forget within a few hours a dream which we remembered very clearly at the time of awakening or, more rarely, we may, on the contrary, recollect a dream which previously seemed to have left no impression whatever upon the mind.

The following is an abstract from the record of a case of epileptic delirium.

Louis M., forty-two years old, cab driver. Father alcoholic. Patient has had epilepsy since infancy. Has typical epileptic convulsions, though not frequent, almost exclusively nocturnal, occurring about once a month. Absences of long duration: one day the patient found himself driving his carriage about eight miles from the place where he wanted to go, not knowing how he came there.

February 17, 1901, towards six o'clock in the evening, following a violent dispute with a neighbor, the patient came home sad, depressed, and told his wife that he would throw himself into the river rather than live in such a disagreeable place. He went to bed without any supper and fell asleep. About nine o'clock he stood up in his bed, seeming to be in great fear and emitting inarticulate cries, then ran with nothing on but his shirt into the next room, seized a hatchet, and came back into the bedroom, where he began to hack away at everything within his reach. His wife, terrified, ran out and called for help. Some of the neighbors came but no one dared to enter the bedroom. In the meantime they could hear the strokes of the hatchet and the cracking of the furniture.

In a few minutes the patient went at the door of the room, kicking it with his feet as though trying to break it down, but making no attempt to open it. Finally three men climbed into the room through the window without the patient hearing them. They approached him from behind, disarmed and overpowered him, and while he defended himself violently and tried to bite them, they succeeded by the greatest efforts in getting him down and tying him to his bed. The patient struggled violently to free himself, but preserved complete mutism all the time and did not seem to recognize anyone. His respiration was panting, skin covered with perspiration, pupils widely dilated.

Towards five o'clock in the morning consciousness appeared to be returning. The patient began to look around him, noticed with astonishment the straps with which he was tied, and said a few words: "Take this off from me. . . What is the matter with all these people? . . ." At about six o'clock he fell into a deep sleep and woke up at noon, tired but lucid. He had some recollection of the beginning of the attack. He said he had had an impression that someone came into the room after him and his wife; it was then that he uttered the cries and ran to get the hatchet. After that he could remember nothing up to the time that he found himself tied in his bed. But what he saw even then he remembered but vaguely: he could not tell who were the people whom he had seen around his bed and said he believed that he had not recognized them at the time. Finally when shown the damage which he had done (the furniture in the room was partly destroyed), he was stupefied and refused to believe that he was the cause of all that destruction.

An attack of epileptic delirium *lasts* from a few minutes to several days. It may be reduced to *a single automatic act.* Like the other manifestations of epilepsy, it may be produced always by the same external influences and assume the same form each time. This is of course far from being always the case.

The *termination* of the delirium is either sudden, following a profound sleep, or gradual, leaving for

several hours delusions and hallucinations which persist in spite of the return of lucidity.

The above is a description of the most common, one may say classical, form of epileptic delirium. Another form is occasionally met with in which *ideas of grandeur* occur in place of the painful delusions; these ideas often assume a mystic character and are associated with a state of *euphoria* which may reach the intensity of ecstasy.

The *diagnosis* is very easy when these phenomena appear in an old epileptic; it becomes very difficult, however, when the epilepsy is "masked, or atypical in its course." [1]

There is no pathognomonic sign of epileptic delirium excepting, perhaps, the *stupor* which follows it and the importance of which is justly insisted upon by Samt and Moeli.[2] However, this stupor may be so slight as to escape the observation of those witnessing the attack. The previous history of the patient may contain nothing to aid in the diagnosis because delirium sometimes constitutes the first manifestation of epilepsy; on the other hand, epileptics may present mental disturbances which have nothing in common with their disease (alcoholic delirium, chronic delusional insanity). *Only upon the entire symptom complex together with the previous history of the patient can the diagnosis of epileptic delirium or of any other epileptic manifestation be established.*

We may distinguish:

Delirium tremens by the occupation delirium, by the

[1] Magnan. *Loc. cit.*, p. 2.

[2] Allg. Zeitsch. f. Psychiat., 1900, Nos. 2 and 3.

intact autopsychic orientation, and by the stigmata of chronic alcoholism;

States of transitory confusion encountered in chronic alcoholism, by absence of the post-epileptic stupor (Moeli);

Delirious attacks of general paresis, which may resemble epileptic delirium, by the patient's previous history and especially by the presence of the special physical signs of this affection;

Attacks of catatonic excitement by the relative conservation of lucidity.

Finally, in epilepsy one may meet with attacks of so-called *epileptic mania* which at times simulate closely the manic type of *manic depressive insanity*. However, in these attacks flight of ideas is much less pronounced, as a rule, and the morbid ideas are much more firmly fixed and much more monotonous.[1]

Several authors, Krafft-Ebing among them, have described under the name of *transitory delirium*, or *transitory mania*, very brief, non-recurring delirious attacks which they consider as a distinct morbid entity. The similarity between these attacks and those of epileptic delirium is such that most alienists consider them as being of epileptic origin, at least in the great majority of cases. This opinion is entertained notably by Schwartz,[2] Régis,[3] and Vallon.[4] According to these authors the cases of transitory delirium which are not

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[1] Heilbronner. *Ueber epileptische Manie nebst Bemerkungen über Ideenflucht.* Monatsch. f. Psychiat. u. Neurol., 1902, Nos. 3 and 4.

[2] Schwartz. *Mania transitoria.* Allg. Zeits. f. Psychiat., 1891.

[3] Régis. *Manuel de maladies mentales.*

[4] Vallon. *Rapport au Congrès d'Angers*, 1898.

of epileptic origin are attributable to some infectious disease, to alcoholism, or to mental degeneration. In the clinic only a close study of the antecedents of a given case enables one to decide to which of these causes the attack is due.

The *etiology* of epileptic delirium is that of epilepsy in general.

Treatment of epilepsy. — We shall consider separately the treatment of epilepsy itself and that of its psychic complications.

The first really belongs to the domain of neurology, and I shall therefore limit myself to a mere statement of the principal indications.

(A) Hygienic measures;

(B) Medicinal treatment.

(A) The *hygiene of an epileptic* consists in: (*a*) A diet by which the quantity of toxines produced in the organism is reduced to the minimum: a partial milk diet combined with white meats, vegetables, eggs, is of great utility. [It has been shown by dietetic experiments [1] that epileptics have a special intolerance for proteid material in any form, and that when their diet contains more proteid than is actually needed by the organism their convulsions are more frequent and more severe and their mental condition is worse than when their diet contains no such excess. The principal dietetic indication is, therefore, to reduce the amount of proteid to the minimum that is required by the organism, replacing the proteid principle, as far as it

[1] Merson. *On the Diet in Epilepsy.* The West Riding Lunatic Asylum Medical Report, 1875. — Rosanoff. *The Diet in Epilepsy.* Journ. of Nerv. and Mental Disease, Dec., 1905.

is possible to do so,[1] by fats and carbohydrates. Care must be taken, however, not to reduce the amount of proteid *below* the necessary minimum, for then a condition of *proteid starvation* is established, that is to say the patient is excreting more nitrogenous material than he is ingesting, and a general aggravation of his condition inevitably follows.] (*b*) The suppression of the use of all alcoholic beverages. (*c*) Outdoor life with moderate physical and mental labor; a mild but firm moral direction. An effort should be made to impress it upon the epileptic that he is subject to the common laws and that he is, like everybody else, responsible for his acts.

(B) *Medicinal treatment.* — Of all the drugs used in the treatment of epilepsy I shall mention only the bromides of the alkali metals, the efficacy of which is incontestable, and opium, which has gained considerable reputation through the recent introduction of a new method of treatment.

The bromides of sodium and of potassium are administered either separately or in a mixture of the two with bromide of ammonium, which mixture is sometimes known as the "tribromide." The doses vary according to the age, the frequency of the attacks, and the tolerance of the subject. The maximum that may be administered to an adult with benefit seems to be from 8 to 10 grams daily. Usually good results can be obtained from moderate doses — from 3 to 6 grams daily.

The action of the bromides seems to be more pro-

[1] Herter. *Lectures on Clinical Pathology*, p. 150.

nounced when the patient is allowed a "hypochlorization" diet; that is to say, a diet in which the amount of sodium chloride is reduced as far as possible (Richet and Toulouse).[1]

Flechsig introduced several years ago a method of treatment consisting in the administration of increasing doses of opium and finally suddenly suppressing the drug. This procedure suspends the attacks in some cases for a very long time. Unfortunately their recurrence is always to be feared.

Treatment of the mental disorders. — The first question which arises is: Should an epileptic be committed? — Yes, in two classes of cases: (1) if the seizures are accompanied by marked delirious disorders; (2) if, independently of the seizures, the patient is subject to violent impulses. Epileptic imbeciles and idiots come under the same rule.

During the delirious attacks the patient is to be constantly watched. Unfortunately rest in bed can be instituted only with great difficulty on account of the profound clouding of consciousness. Prolonged baths and the prudent use of hypnotics are here especially indicated. Refusal of food and threatening collapse are to be treated by ordinary methods.

Responsibility. — An epileptic is not to be considered as absolutely irresponsible except in the following three cases: (1) if the act which he is accused of is committed during a delirious attack; (2) if he is a dement; (3) if he is an idiot or an imbecile.

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[1] Capeletti and Ormea. *Le régime achloruré dans le traitement bromuré de l'épilepsie.* Rev. de Psychiat., Apr., 1902.

If the act is committed during a lucid interval and if, outside of the attacks, the patient presents no evident signs of intellectual enfeeblement, he should be considered responsible, at least partially so if an allowance is to be made for his irritable and impulsive disposition.[1]

Similarly, an epileptic ought not be declared legally incompetent unless he presents some permanent mental disorder.

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[1] See the remarkable case reported by Motet in *Ann. d'hyg. publiq. et de méd. lég.*, 1882.

CHAPTER XVI.

HYSTERIA.

To make a complete study of the mental disorders of hysteria would mean to consider the entire clinical history of this neurosis, for hysteria is essentially a mental affection. It is, however, the custom to leave a considerable portion of this subject to neurology, reserving for psychiatry the phenomena belonging to its own sphere, not only from their origin, but also from their aspect. The paralyses, contractures, anæsthesias, in a word all the *somatic* symptoms, will therefore be systematically omitted from the following description.

The mental disorders of hysteria are all dependent upon the *predominance of the automatism over the voluntary and conscious psychic operations.* These disorders are classified as *permanent* and *paroxysmal.*

Permanent mental disorders. — These constitute the *mental stigmata* of Janet,[1] and impart to the personality of the hysterical subject its peculiar clinical aspect. The following are the principal ones:

(*a*) *Weakening and mobility of attention,* which no longer directs the associations of ideas, thus leaving uncontrolled the mental automatism. In some cases the patient lives as in a dream in which images and ideas follow each other without order or logical sequence.

[1] Pierre Janet. *État mental des hystériques.*

In other cases the automatism assumes the form of a fixed idea upon which the affective phenomena and the reactions are dependent. Almost always subconscious, the hysterical fixed idea requires a careful search for its discovery and often cannot be revealed except during hypnotic sleep.

(*b*) *Disorders of memory; amnesia of reproduction:* recollections cannot be evoked at will though they may still arise automatically; this amnesia of reproduction is often partial and in its course is subject to numerous remissions and exacerbations; its duration is very variable, from a few minutes to several years; illusions and hallucinations of memory form the basis of *pseudo-reminiscences* remarkable for their vividness, their wealth of detail, and their quite probable character: they result from extreme suggestibility and often originate from a story the patient has read or from an event narrated in his presence.

(*c*) *Changes of affectivity and of disposition:* morbid indifference associated with great variability of moods, egoism, sensitiveness, and a morbid desire to attract attention. The hysterical subject thus resembles closely the constitutional psychopath: both bear the stamp of marked mental degeneration, and they belong to two closely related groups of individuals predisposed to mental alienation.

The *morality* of hysterical subjects has been much discussed with special reference to their duplicity and tendency to prevarication. Some see in the falsehoods of the patients nothing but errors attributable to amnesia; others, less tolerant, consider these falsehoods as intentional, and see in them a sign of perversity.

Both opinions are partly true. It is certain that these patients often commit errors unconsciously, but it is equally certain that they also prevaricate knowingly. The common phrase *hysterical lies* is not an unjustified one.

(*d*) *Anomalies of sexual life:* sometimes, much less frequently than is commonly claimed, hysterical subjects present *erotic tendencies;* much more often there is *frigidity* with or without sexual perversion.

(*e*) *Weakening of the will:* aboulia is a constant phenomenon and manifests itself in apathy and negligence. Though occasionally the patient gives evidence of feverish activity, the duration of this activity is but brief and the subsequent reaction is marked by an exaggeration of the aboulia.

Automatic reactions replace voluntary ones and are met with in the most varied forms: pathological suggestibility, catalepsy, passionate impulses, etc.

Episodic mental disorders. — These may either accompany the hysterical attacks or occur independently of them.

(*a*) *Mental disorders associated with the attacks.* — These are:

(1) *Before the crisis:* an accentuation of the ordinary anomalies of the character; sometimes appears a hallucination, a fixed idea.

(2) *During the crisis:* hallucinations, delusions, or motor excitement may partly or completely replace the ordinary hysterical phenomena (maniacal or ecstatic form of crisis).

(3) *After the crisis:* delusional states associated with multiple combined hallucinations which are often of an

erotic nature and which may give rise to passionate attitudes and movements.

(*b*) Among the *mental disorders occurring independently of the attacks* an important one is *somnambulism*, spontaneous or induced; it presents the most perfect form of psychic automatism.

Closely related to somnambulism are the hysterical *states of obscuration*, which present themselves in two different forms: (α) the stupid form, characterized by mental hebetude and absence of reactions; (β) the agitated form, characterized by violent reactions and excitement associated with confused delirium. Sometimes the excitement is so pronounced as to simulate epileptic delirium. The duration of the attack is scarcely ever more than a few days.

Hysterical subjects may also have acute attacks resembling manic depressive insanity, which are known as *hysterical mania* and *melancholia*. I shall return to this subject in connection with the differential diagnosis.

A *positive diagnosis* of hysterical mental disorders is chiefly to be based upon the existence of the psychic stigmata mentioned at the beginning of this chapter and of the physical stigmata which are described in all works on neurology: clavus or globus hystericus, ovaralgia, anæsthesia, monoplegia, visceral disorders such as obstinate vomiting, palpitation, etc.

The *differential diagnosis* from the following conditions is sometimes very difficult:

(*a*) *Catatonia*. —The problem is a complicated one, since most of the catatonic phenomena may be encountered in hysteria, also most of the hysterical symptoms, nervous and psychic, may occur in catatonia.

The only certain differential feature is *intellectual enfeeblement*, which is almost constant in catatonia and altogether exceptional in hysteria. Before its appearance the diagnosis remains doubtful, and can only be surmised from the following features: psychic disaggregation is more marked in catatonia, resulting in true incoherence; the symptoms in catatonia have a more stable character; stereotypy is more marked; emotional indifference is more pronounced; there is no subconscious fixed idea.

(*b*) *Epilepsy.*— Unconsciousness during the seizure, subsequent amnesia, which is more constant and more complete in epilepsy than it is in hysteria, and the nature of the convulsive seizures serve as a basis for the diagnosis, which is in some instances very difficult to establish. Moreover it seems that hysteria and epilepsy may exist together in the same subject.

(*c*) *Mania.* — Here the excitement is usually more continuous and less affected by external influences, such as the presence of spectators, which always increases the excitement of hysteria; flight of ideas is much more distinct; hallucinations are more rarely seen.

(*d*) *Melancholic depression.* — The depression is continuous and durable and is independent of external influences, while in the hysterical patient a pleasantry or a word of encouragement often suffices to dissipate, at least momentarily, the melancholic phenomena. Manifestations of psychic automatism are much less marked in melancholic depression than in hysteria.

The *prognosis* of hysteria is grave. The episodic mental disorders usually subside, either spontaneously or under the influence of treatment; but the hysterical

disposition remains and renders recurrency of attacks probable.

The *treatment* [1] consists in rest, isolation, hydrotherapy, and mental suggestion, which, with or without hypnosis, produces marvelous results; also attention to the somatic disturbances so frequent in hysteria is of importance.

Excitement is to be treated by the usual methods. Isolation often produces very happy results.

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[1] Sollier. *L'hystérie et son traitement.* Paris, F. Alcan.

CHAPTER XVII.

ARRESTS OF DEVELOPMENT.

Like the constitutional psychopaths, the feeble-minded belong to that class of degenerates who enter life with a mental disorder which is not merely potential but actual.

Etiology. — All the causes mentioned in the chapter on general etiology as being capable of giving rise to degeneration may bring about an arrest of development, if their action is exercised during intrauterine life or during the early years of extrauterine life. In the latter case the affection is in reality an acquired one, but is clinically practically identical with the congenital form.

Two factors, however, deserve special mention: *alcoholic heredity* and *syphilitic heredity*. Alcoholism in all its forms is encountered in the parents of idiots and imbeciles: chronic alcoholism, drunkenness at the moment of conception or during pregnancy, etc. Recent statistics compiled by Bourneville show that 48% of idiots and imbeciles are the offspring of alcoholic parents.

[These figures correspond approximately to those published by most other authors. Yet the question of the effect of parental alcoholism upon the offspring cannot be said to have been fully answered. The fact that a large percentage of the parents of defective children are alcoholic lacks significance in view of the great

prevalence of alcoholism and in the absence of accurate data concerning the frequency of alcoholism in the parents of normal children. Further, there is some evidence which suggests that alcoholism is often but a symptom of neuropathic constitution, so that abnormal traits in the offspring of alcoholic parents may possibly be attributable to inheritance of the neuropathic taint rather than to the injurious effect of alcohol upon the germ plasm. Unfortunately statistics bearing upon this important subject have not always been very critically examined.

In a recent memoir from the Francis Galton Laboratory for National Eugenics, University of London,[1] consisting of a careful and apparently trustworthy statistical research of this subject, we find, among others, the following conclusions:

"There is a higher death rate among the offspring of alcoholic than among the offspring of sober parents."

"Owing to the greater fertility of alcoholic parents, the nett family of the sober is hardly larger than the nett family of the alcoholic."

"The general health of the children of alcoholic parents appears on the whole slightly better than that of the children of sober parents. There are fewer delicate children and in a most marked way cases of tuberculosis and epilepsy are less frequent than among the children of sober parents."

"Parental alcoholism is not the source of mental defect in offspring."

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[1] Ethel M. Elderton and Karl Pearson. *A First Study of the Influence of Parental Alcoholism on the Physique and Ability of the Offspring.* London, 1910.

"The relationship, if any, between parental alcoholism and filial intelligence is so slight, that even its sign cannot be determined from the present material."]

Syphilitic heredity may act in two ways: either by giving rise to a congenital anomaly through intrauterine disorders or by causing the appearance of meningeal and cerebral lesions during the first months of life of which arrest of development is the consequence.

Two kinds of arrest of development are distinguished: (1) a general arrest of development involving all the psychic functions; three degrees are usually recognized: *idiocy, imbecility,* and *feeble-mindedness;* (2) an arrest of development which is almost wholly limited to the moral sphere — *moral insanity.*

§ 1. General Arrest of Development: Idiocy, Imbecility, Feeble-mindedness.

First Manifestations. — According to Sollier, who has made an extensive study of these anomalies, the principal early manifestations are:

(*a*) Difficulty in taking the breast; it seems each time that the act is a new one to the child;

(*b*) Violent, continued, and unprovoked *crying;*

(*c*) Impossibility of fixing the child's gaze;

(*d*) Lack of expression in the physiognomy.

Later on, at the age when intelligence becomes manifest in normal children, the signs of psychic insufficiency become more and more evident. The child is sad, surly, ... or, on the contrary, extraordinarily noisy and turbulent. It does not speak or it may be able to say only a few words at an age when other children already dispose of

quite a vocabulary. Still more important than the language of transmission is that of reception. The chief characteristic of the congenital imbecile is the restricted number of words, not which he can pronounce, but *which he can understand.*

Physically arrest of development manifests itself in retardation of growth, of development of the hairy system, and especially of learning to walk.

Symptoms. — As with the growth of the child the psychic functions become of greater importance, their insufficiency becomes more apparent and manifests itself in the impossibility of the subject's deriving any benefit from education.

This incapacity is due to *absence or weakness of attention* (Sollier), so that the degree of atrophy of this faculty can serve as a basis for the classification of arrests of development. Sollier distinguishes:

(1) *Absolute idiocy:* complete absence and impossibility of attention;

(2) *Simple idiocy:* weakness and difficulty of attention;

(3) *Imbecility:* instability of attention.

We may add also *feeble-mindedness*, in which, as in imbecility, the attention is unstable, though to a less marked degree.

Atrophy of attention is, therefore, the most important symptom of arrest of psychic development.[1]

Around this is grouped a certain number of other symptoms which I shall mention briefly:

(*a*) Sluggishness and lack of variety in the psychic

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[1] Sollier. *Psychologie de l'idiot et de l'imbécile.* Paris, F. Alcan.

processes, entailing insufficiency of judgment and absence or rarity of generalized ideas. The latter two symptoms are most striking in the feeble-minded.

(*b*) *Weakness and inaccuracy of the memory.* An idiot or an imbecile is seldom able to relate correctly an event that he has witnessed. The details and even the facts themselves are altered. Quite frequently imbeciles relate pseudo-reminiscences which indicate by their monotonous and childish character a very poor imagination.

(*c*) *Moral indifference* associated with *morbid irritability* (this symptom is to be looked upon as an expression of a disorder of the moral sense), *impulsive reactions and extreme suggestibility;* this latter disorder, together with the weak memory, insufficient judgment, and atrophied moral sense, renders the testimony of an idiot or an imbecile acceptable only with extreme caution.

(*d*) *Disorders of language.* In the lowest grade of idiocy language is absent. In simple idiocy and in imbecility we usually find:

(1) A *vocabulary* that is more restricted than in normal individuals of the same age and under the same conditions.

(2) Errors of *syntax* which are at times very curious. Some idiots make use of faulty construction: "Me no sick," etc. Others never use the pronouns *I*, *you*, *he*, etc., referring to themselves and to others by their proper names. One imbecile, Elsie B., used to say, "Elsie B. is going to bed." The substitution of a pronoun for a proper name is an intellectual operation impossible for these patients. In the pronunciation we often notice *lisping*, *stammering*, and *stuttering*. Written language,

necessitating very complex associations, is still less developed than spoken language. Many imbeciles are unable to read, and only few are able to write properly. Writing necessitates delicate movements in addition to the difficulties of reading. *Language of gesture and expression*, the most elementary of all forms of language, is least affected. Usually, however, it has not the same liveliness as in the normal individual. A single glance suffices to distinguish the idiot who does not speak from the intelligent deaf-mute.

These are the essential and fundamental features of idiocy and imbecility. They may present all degrees, from complete idiocy in which the mentality of the individual is inferior to that of an animal to slight feeble-mindedness which is compatible with a normal social existence. These extremes are connected by an infinity of intermediate degrees, so that no distinct lines of demarcation can be drawn between idiocy, imbecility, and feeble-mindedness.

All the mental faculties are not always atrophied to the same extent. The *memory* is sometimes very good, occasionally even exceptionally so. "Forbes Winslow (quoted by Sollier) reports a case of an idiot who could recall the dates of death of all those who died in his town during thirty-five years, giving correctly their names and ages." Some imbeciles present relatively remarkable aptitudes for the arts, especially for music. They retain with surprising facility complicated pieces of music, and are able to reproduce them passably well on an instrument. Still they never acquire a true talent, for they lack the *attention* which is necessary for the development of their natural aptitudes.

Physically all the anatomical stigmata of degeneration may be met with in idiots and imbeciles.

The sexual instinct is absent (lowest type of idiocy), or abnormally developed, or perverted. Many idiots and imbeciles are addicted to masturbation, to pederasty, or have a tendency to commit acts of rape, exhibitionism, sadism, etc.

Filthy habits are frequent: the patients soil and wet themselves. Often this symptom is only nocturnal and can be combated by constant supervision.

Complications. — These are somatic and psychic.

The former arise from defects of development or from a low resistance of the organism. They are, on the one hand, the malformations constituting the physical signs of degeneration, and, on the other hand, various infections occurring upon a basis of poor nutrition of the tissues.

Among the sequelæ left behind by the infections a prominent place belongs to permanent lesions of the brain and cord, which give rise to phenomena of paralysis, atrophy, etc. (infantile hemiplegia, infantile palsy, strabismus). These disorders are often coincident in time with the mental disorders and are dependent upon the same causes.

Epilepsy forms a transition between the somatic and the psychic complications. The frequency of infantile convulsions in the histories of cases of arrested development in itself shows the close relationship existing between epilepsy and arrested development. Epileptic seizures are frequent in idiots and imbeciles. The commotion which the seizures exercise upon the psychic functions leads to an accentuation of the mental de-

bility. The imbecile becomes, in addition, an epileptic dement.

One frequently observes in the feeble-minded acute or subacute *mental outbreaks* which appear in various clinical forms: maniacal excitement, depression, sometimes delusions more or less imperfectly systematized. Often the mental disorders appear as exaggerations of a constitutional anomaly, essentially a function of the subject's make-up. An individual habitually touchy and suspicious develops persecutory delusions, another habitually psychasthenic suffers an attack of depression, etc. Such episodes in imbecility are incontestable clinical realities, and nothing is more justifiable than, for instance, a diagnosis of maniacal excitement in an imbecile. Unfortunately it is very difficult to assign for such episodes a place in psychiatric nosography. Do they constitute mental disorders peculiar to imbecility? Are they not, on the contrary, periodic psychoses to which the imbecility merely imparts special features: mobility of the symptoms, childish character of the delusional conceptions? For my part, I am rather inclined toward the second hypothesis. In fact a full series of transition cases leads from classical manic depressive insanity to the more typical attacks of imbeciles. Moreover, such attacks in imbeciles present the same tendencies toward recovery and toward recurrency. It must be noted, however, that the influence of external causes, psychic as well as physical, in bringing about recurrencies, appears to be more marked in imbeciles than in manic depressive persons who are not defective. It is also to be noted that the effect of suggestion upon the mental symptoms is surely more pronounced in the

psychoses of imbeciles than in ordinary types of intermittent psychoses, so that psychic treatment is here found to be more efficacious.

Prognosis, diagnosis, treatment. — Arrests of development are not diseases, but infirmities; their prognosis is, therefore, grave. Education may, however, exercise a favorable influence upon some subjects.

The elements of *diagnosis* are to be found in the history of the subject; the absence of any vestige of more complete intellectual development previous to the time of examination must be established.

[The diagnosis of arrests of development involves in practice not only the task of differentiating them from states of acquired mental deterioration, but also that of detecting high degrees of feeble-mindedness approaching the normal and that of determining in a given case the degree of mental defect. For such purposes a system of tests constituting *a measuring scale of intelligence* has been recently devised by Binet and Simon.[1] These tests have been applied to normal children of various ages and have thus been standardized, so that it is now possible by means of them to estimate the degree of mental development of any subject in terms of the age at which such development corresponds to the normal average. The authors of these tests have taken special pains to eliminate the disturbing influence of education, having made it their aim to devise a measure of natural mental capacity and not of degree of training.

The entire system of tests is given here partly as

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[1] Binet and Simon. *Le développement de l'intelligence chez les enfants.* L'Année psychol., Vol. XIV, 1908.

published in the memoir of Binet and Simon and partly as adapted for English-speaking subjects by Goddard[1] and by Whipple.[2]

Children of Three Years.

1. *Where is your nose? Your eyes? Your mouth?*
   These questions test comprehension of language and can be answered by gestures.
2. *Repetition of sentences.*
   Papa. (2 syllables.)
   Slipper. Letter. (4 syllables.)
   It is cold and snowing. (6 syllables.)
   I have a dog; he's a fine one. (8 syllables.)
   His name is Jack. Oh, what a naughty boy. (10 syllables.)
   It is raining outdoors, but we can stay inside. (12 syllables.)
   We are having a fine time, we found a mouse in the trap. (14 syllables.)
   Let's all go for a walk to-day. Please give me that big hat to wear. (16 syllables.)
   Poor Helen has just torn her new dress. She will surely feel sorry for that. (18 syllables.)
   Why should any one want to do injury to such beautiful creatures as birds. (20 syllables.)
   We expect to have a great time at the seashore, digging in the white beach sand all day long. (22 syllables.)
   When the train crosses the road the engineer will blow the whistle and the fireman will ring the bell. (24 syllables.)
   My young brother Frank had a fine time on his vacation this summer; he went fishing almost every day. (26 syllables.)
   To start a fire in the open is one of those tricks that every one thinks he can perform until he tries it. (28 syllables.)
   He sinks the net in the water and waits until he can see the fish distinctly, lying perfectly still and within reach. (30 syllables.)

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[1] H. H. Goddard. *A Measuring Scale of Intelligence.* The Training School, Vol. VI, No. 11, Jan., 1910.

[2] G. M. Whipple. *Manual of Mental and Physical Tests.* Baltimore, 1910.



FIG. 5.



FIG. 6.

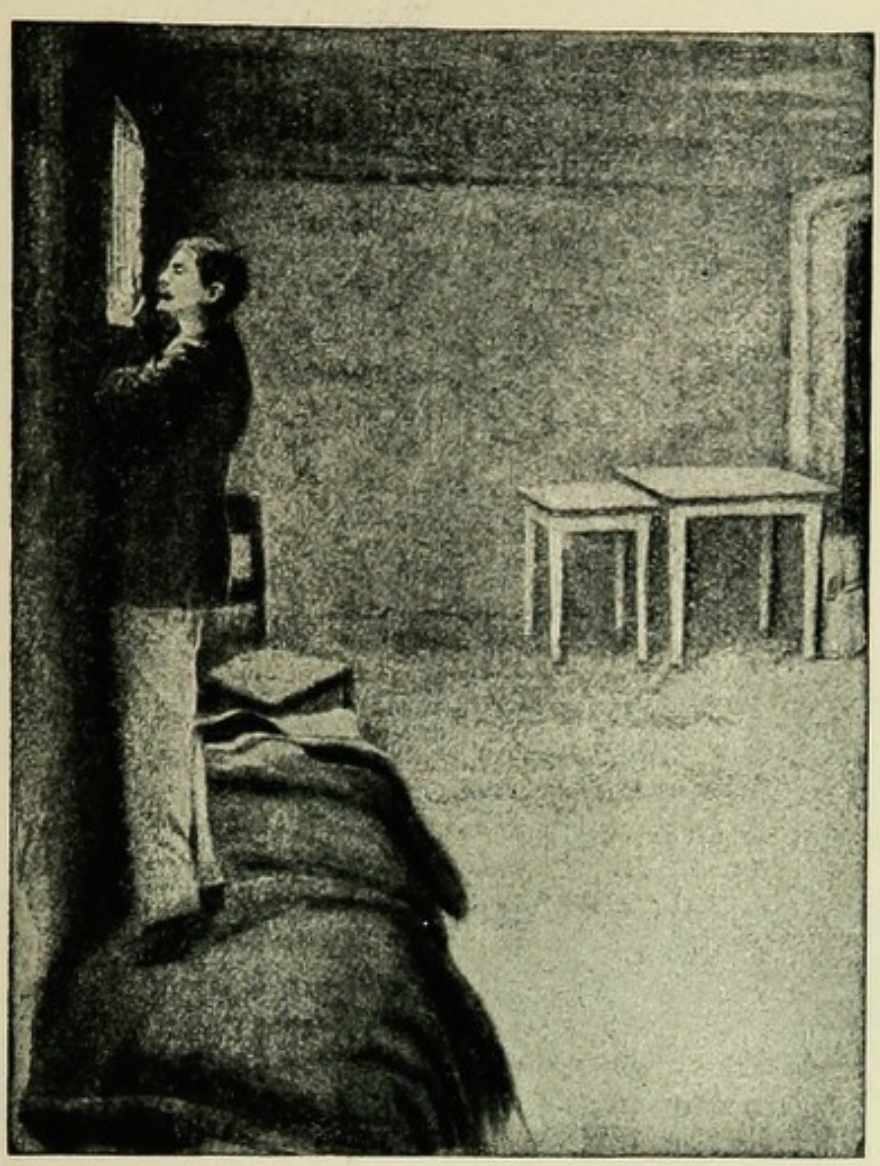


FIG. 7.

The average child of three years will repeat a sentence of six syllables but not of ten. At six years all children can repeat a sentence of sixteen syllables. At twelve a child should be able to repeat a sentence of twenty-six syllables. The test is passed only when the sentences are repeated without a single error.

3. *Repetition of figures:* 3, 7; 6, 4.

As a rule, a child of three years cannot repeat more than two figures.

4. *Description of pictures.*[1] (Figs. 5, 6, and 7.)

[1] Goddard recommends a special set of eight pictures because it is a larger series, because the subjects represented are better adapted to a child's intelligence, and because they are colored. Sets of these pictures may be obtained through the Training School at Vineland, N. J.

What do you see there?

At least three different types of responses are obtained, characteristic of different degrees of mental development. A child of three merely *enumerates* objects represented in the picture. A child of seven *describes* objects and action: "A man and a little boy drawing a cart." A child of twelve *interprets:* "A poor man moving his furniture." "These are some unfortunates who have no place to sleep." "This is a prisoner."

5. *What is your name?*

Children of three years know their given name; they do not always know their family name.

Children of Four Years.

6. *Are you a little boy or a little girl?*

Children of three years often answer incorrectly, those of four years always answer correctly.

7. *Naming familiar objects.*

What is this? (Key.) *And this?* (Knife.) *And this?* (Penny.)

8. *Repetition of three figures:* 7, 2, 9.

9. *Comparison of two lines: Which line is longer?*

Draw two lines, parallel to each other, 5 and 6 cm. long respectively, 3 cm. apart. Hesitation is failure in the test.

Children of Five Years.

10. *Comparison of weights: Which is heavier?*

Use weighted blocks of wood of equal size and appearance. Comparison is between 3 gms. and 12 gms. and between 6 gms. and 15 gms. If necessary the child may be assisted by the suggestion to take up the weights in the hands, but must not be shown how to handle and compare the weights.

11. *Copying a square.*

One draws a square of 3 or 4 cm. and the child is asked to copy it with pen and ink, not with pencil. Fig. 8 shows results that may be recorded as satisfactory (upper row of squares) and some that should not be recorded as satisfactory (lower row), the drawings not being recognizable as squares.

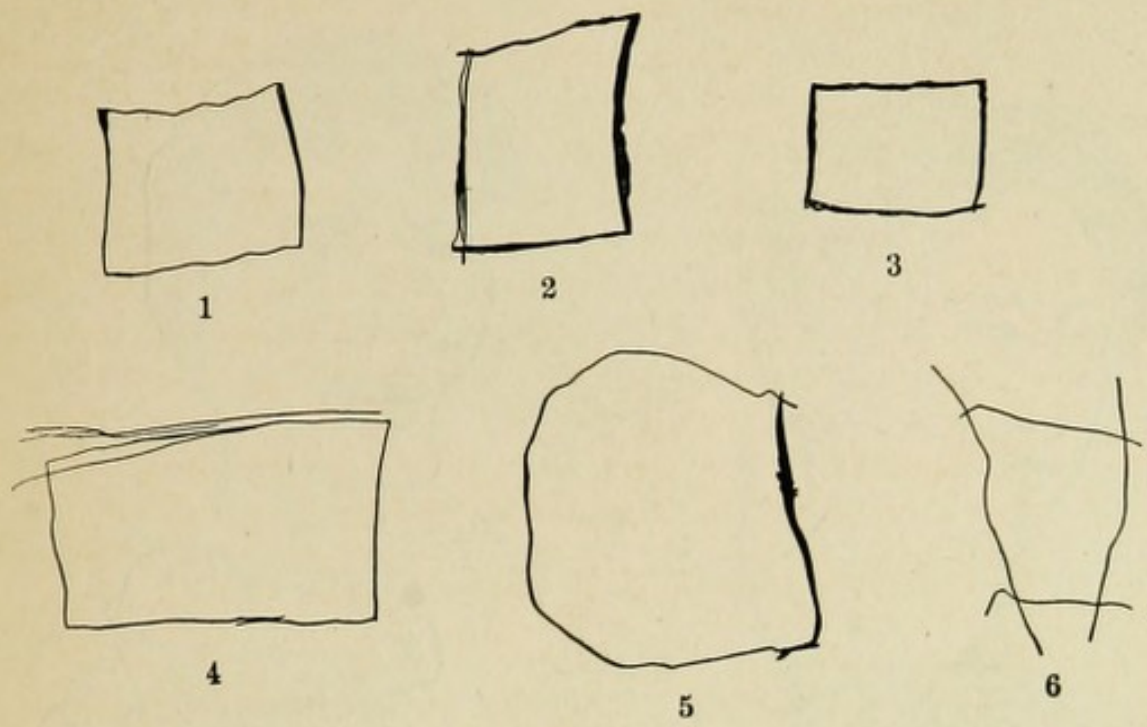


FIG. 8.

12. *Restoring divided rectangle.*

Two visiting cards of equal size and shape may be used. One is cut diagonally in two and the pieces are placed on the table before the child with the hypothenuses away from each other; the uncut card is also placed on the table and the child is asked to put the two triangular pieces together so as to make a figure like the uncut card. If in the attempt the child turns one of the pieces wrong surface up the examiner should turn it right surface up again so that the proper apposition would be possible; no other assistance should be given and the examiner must not betray by look or gesture whether the child is right or wrong.

13. *Counting four pennies.*

The pennies are placed in a row and the child must point to each one separately in counting.

Children of Six Years.

14. *Show me your right hand; your left ear.*

No hint by look or word must be given.

15. *Repetition of sentences of sixteen syllables.*

See Test 2.

16. *Æsthetic comparisons: Which is the prettier?*

Fig. 9.

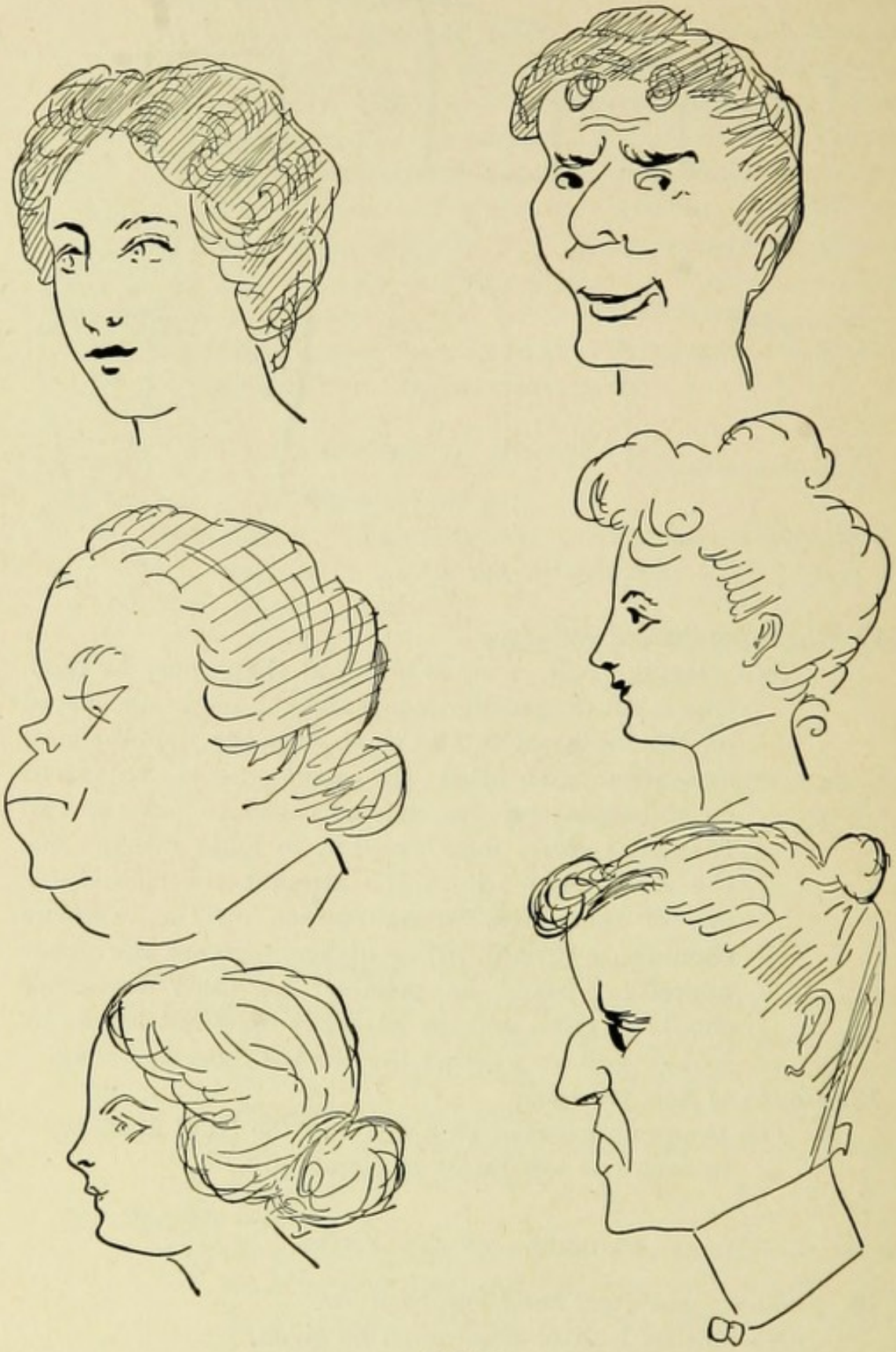


FIG. 9.

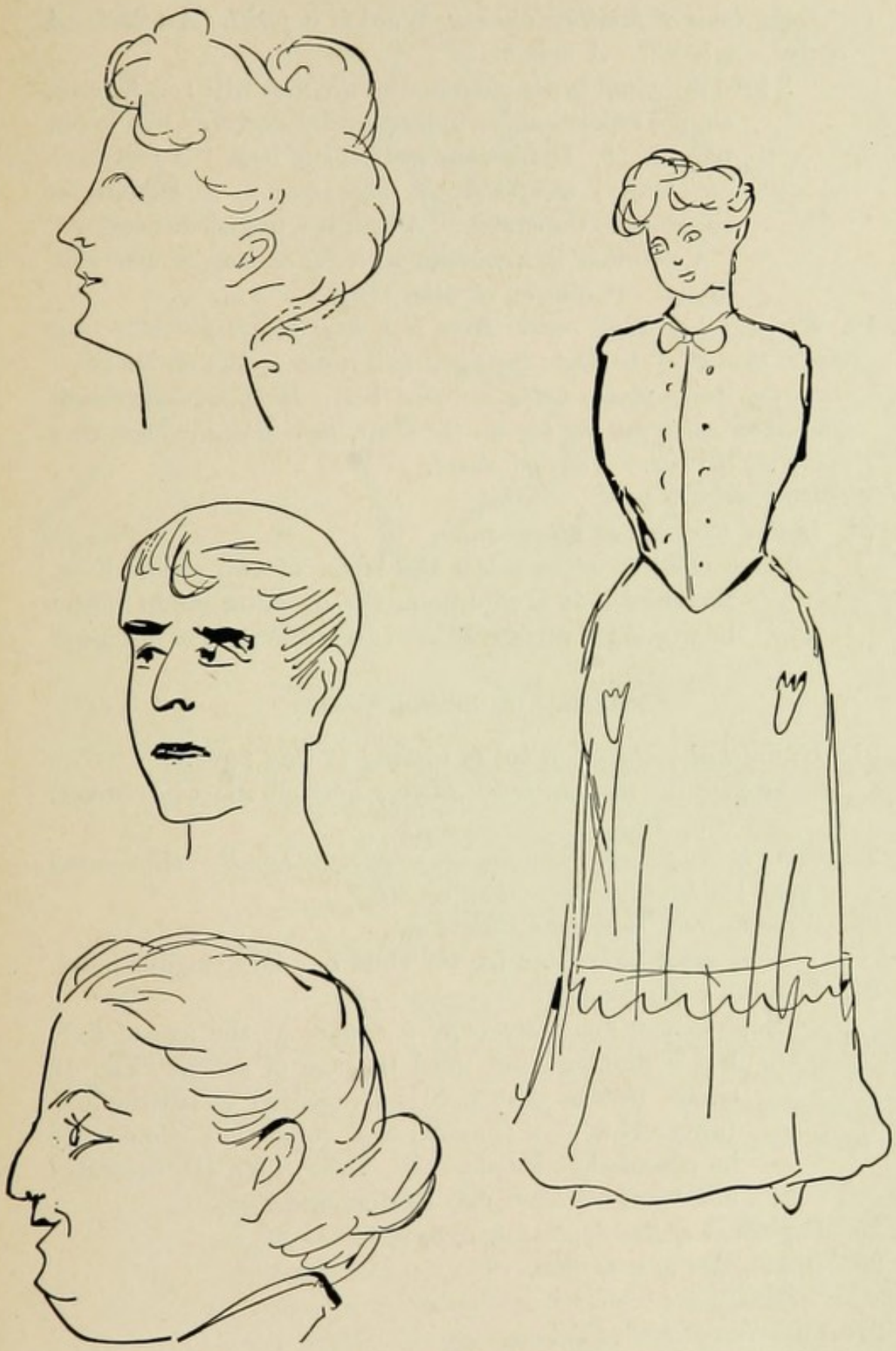


FIG. 10.

17. *Definitions of familiar objects: What is a fork? A table? A chair? A horse? A mamma?*

Three principal types of responses are met with: *a.* Silence, simple repetition, or indication by gesture: test is not passed. *b.* Definitions in terms of use: "A fork is to eat with." (Children of six years.) *c.* Definitions superior to the above: "A fork is a utensil for eating." "A mamma is a woman who takes care of her children." (Children of nine years.)

18. *Execution of triple order: Here is a key; please put it on that chair; then shut the door; then you will notice a box on the chair near the door; please bring me that box. Do you understand? Remember, first put the key on the chair, then shut the door, then bring me the box. Now, go ahead.*

19. *How old are you?*

20. *Is this morning or afternoon?*

Some children often select the latter of two alternatives, therefore if it is afternoon the question might better be worded in reverse order: *Is this afternoon or morning?*

Children of Seven Years.

21. *Unfinished pictures: What is lacking in this picture?*

To pass the test three out of four answers must be correct. (Fig. 10.)

22. *How many fingers have you on your right hand? How many on your left hand? How many on both?*

23. *Writing from copy: See little Paul.*

Copy must be written for the child in a large legible hand.

24. *Copying a diamond.*

Children can generally copy a square at the age of five, but a diamond not until the age of seven. Fig. 11 shows results that may be recorded as satisfactory (upper row of diamonds) and some that should not be recorded as satisfactory (lower row), the drawings not being recognizable as diamonds.

25. *Repetition of five figures:* 4, 7, 3, 9, 5.

26. *Description of a picture.*

See Test 4.

27. *Counting thirteen pennies.*

The pennies are placed in a row and the child must point to each one separately in counting.

28. *Naming four common coins: penny, nickel, dime, quarter.*

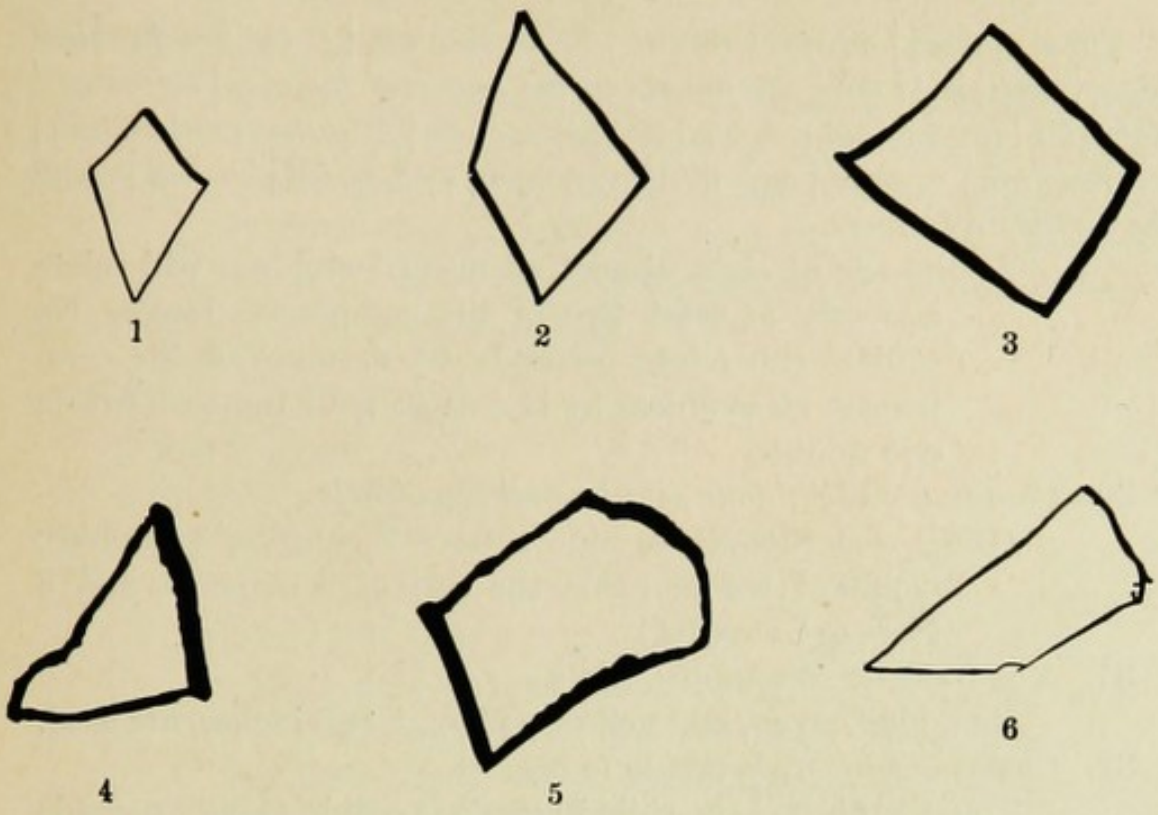


FIG. 11.

CHILDREN OF EIGHT YEARS.

29. *Reading and relating.*

The child is asked to read aloud the following news item; the time occupied in the reading is recorded in seconds; a record is made also of the manner of reading: whether letter-by-letter, by syllables, or hesitating, fluent, or expressive; at the same time note is taken of any word that is misread.

THREE HOUSES BURNED.

Boston, September 5th. A serious fire last night destroyed three houses in the center of the city. Seventeen families are without a home. The loss exceeds fifty thousand dollars. In rescuing a child one of the firemen was badly burned about the hands and arms.

Average time occupied in the reading is for children of eight years 45 seconds; for children of nine, ten, and eleven years 40, 30, and 25 seconds respectively. A few seconds after the child has finished the reading he is asked to relate what he has read. The entire news item may be divided into twenty component elementary ideas, as follows:

Three houses | burned | Boston | September 5th | a serious fire | last night | destroyed | three buildings | in the center of the city | seventeen | families | are without a home | the loss exceeds | fifty thousand dollars | in rescuing | a child | one of the firemen | was badly | burned | about the hands and arms.

At the age of eight almost all normal children will relate correctly at least two of the component ideas. No subject can relate correctly six or more of the component ideas unless he is able to read the text within one minute.

30. *Counting money: four pennies and two nickels.*

(Binet and Simon use nine sous — 3 simples, 3 doubles; Goddard recommends the use of 3 one-cent and 3 two-cent stamps.)

31. *Naming four elementary colors.*

Red, blue, green, and yellow papers, 1 × 3 inches, are used.

32. *Counting back from twenty to one.*

To pass this test the child must do it within twenty seconds and with not more than one error of omission or transposition. If necessary the child may be assisted by starting him with: "20, 19, 18, *what comes next?*"

33. *Writing from dictation: The pretty little girls.*

The writing must be intelligible.

34. *Comparison of two things recalled in memory: What is the difference between a butterfly and a fly? Between wood and glass? Between paper and cloth?*

The question may be more plainly put as follows: "*You know what butterflies are, you have seen them, have you not? — Yes. — And you know what flies are, do you not? — Yes. — Is a butterfly just like a fly? — No. — In what are they not alike?*" — At six one-third of the children succeed in this test; at seven nearly all; at eight all.

Children of Nine Years.

35. *Orientation in time: What day of the week is to-day? What month? What date? What year?*

The test is passed if the day of the month is given within three days of the actual date, either way.

36. *Reciting the days of the week.*

Should be done within ten seconds without any omission or transposition.

37. *Making change.*

Play store; let the child have 25 pennies, 5 nickels, and 2 dimes; purchase from him an article costing 9 cents and make payment with a 25-cent piece, asking him to give change. Scarcely any child passes this test at seven; one-third succeed at eight; all succeed at nine.

38. *Definitions of familiar objects.*

See Test 17.

39. *Reading and relating.*

See Test 29.

40. *Arrangement of weights.*

Five wooden blocks of equal size and appearance, weighing respectively 6, 9, 12, 15, and 18 grams, are used. The child is first told that the blocks are not alike in weight and is then asked to arrange them in order from the lightest to the heaviest. Three trials are made for which not over three minutes is allowed; the arrangement should be without error in two out of the three trials.

Children of Ten Years.

41. *Reciting the months of the year.*

Should be done within fifteen seconds and with not more than one omission or transposition.

42. *Denomination of money, bills and coins.*

Place before the child the following bills and coins in the order as here given: penny, half-dollar, two dollars, dime, five dollars, quarter, one dollar, and nickel. Let the child name each piece, pointing to each one as he does so.

43. *Sentence building.*

The words *Philadelphia, money, river* are written on a blank sheet of paper and read over to the child several times; the child is then asked to make a sentence which shall contain these three words. One obtains four principal types of responses: *a.* Three separate sentences: "Philadelphia is a city; my father has money; the river is deep." *b.* One sentence with two distinct ideas: "In Philadelphia there is a river and there are people who have much money." *c.* One sentence in which the three words are combined in

a single idea: "On the river near Philadelphia one can hire sailboats for very little money." *d.* Several sentences, but well coördinated: "In my childhood I lived in Philadelphia; two blocks from our street flowed the Delaware River; much money has since been spent in beautifying that part of the city." The child must write the sentence; at the expiration of a minute the sentence must be at least three-fourths completed. Responses of the first type are regarded as failures; those of the other types are given by few children of eight years, by one-third of the children at nine, and by one-half at ten; a child of eleven should give sentences of the third or fourth type.

44. *Questions to test judgment: First series.*

Answers to these questions may be classed as correct or incorrect in accordance with obvious common sense. Examples of correct and incorrect answers are here given in connection with each question.

What ought one to do when one has missed a train? Correct answers: Wait for the next train. Take another train. — Incorrect answers: One should try not to miss it. Run after it. Buy a ticket.

What ought one to do when one has been struck by a playmate who did not do it purposely? Correct answers: Do nothing to him. Forgive him. Tell him to be careful next time. — Incorrect answers: Tell the teacher. Strike him back.

What ought one to do when one has broken something belonging to another? Correct answers: Pay for it. Replace it. Confess it. — Incorrect answers: Cry. Must make him pay. Go to the police.

To these simple questions half the children of seven and eight years, three-fourths of nine years, and all of ten years respond correctly.

Second series.

What ought one to do when one is late for school? Correct answers: Hurry. Run. — Incorrect answers: One is punished. One must start at an earlier hour. Bring an excuse from the parents.

What ought one to do before taking part in an important affair? Correct answers: Consider it carefully. Ask for advice. — Incorrect answer (given by some sub-

jects of Binet and Simon, quite irrelevant apparently owing to imperfect comprehension of the question): One must take care of the sick. Consult a physician. One should go away.

Why does one excuse a wrong act committed in anger more easily than a wrong act committed without anger? Correct answers: Because when one is angry one does not know what he is doing. In anger one is not responsible. — Incorrect answers: When one is angry one will not listen. One should not be angry.

What should one do when asked his opinion of some one whom he does not know well? Correct answers: One should say nothing. One should not speak without knowing. One should keep silence because he might give wrong information. — Incorrect answers: One should ask him. One should answer. One should say: Be prudent. One should say that he does not know his name.

Why ought one to judge a person more by his acts than by his words? Correct answers: Because words may deceive, but acts show the truth. Because one is more sure from seeing the acts than from hearing the words. — Incorrect answers: One should not tell a lie. Because one does not know.

The questions in the second series are more complex and the judgment required more subtle. After each question the subject should be allowed at least twenty seconds for reflection. Three correct responses out of five are sufficient to pass the test. At seven or eight years no child passes this test; not quite half pass at ten; the test is therefore for the age of transition between ten and eleven.

Children of Eleven Years.

45. *Detecting absurdities or contradictions.*

The following explanation is first made to the child: "*I am going to give you some sentences in which there is nonsense. You listen carefully and see if you can tell me where the nonsense is.*" Then the following sentences are slowly read off to him one by one:

An unfortunate bicycle rider broke his head and died from

the fall; they took him to the hospital but they do not think that he will recover.

I have three brothers, Paul, Ernest, and myself.

The police found yesterday the body of a young girl cut into eighteen pieces. They believe that she killed herself.

Yesterday there was an accident on the railroad, but it was not serious; only forty-eight persons were killed.

The engineer said that the more cars he had on his train the faster he could go.

To pass this test at least three out of the five answers must be correct. Hardly any child of nine passes; at ten not quite one-fourth; at eleven one-half.

46. *Sentence building.*

See Test 43.

47. *Giving words.*

The child is asked to give as many words as he can in three minutes. He may be assisted by being started: "*beard, table, skirt, carriage.*" It may encourage him to be told that other children have given as many as two hundred words. At least sixty words must be given to pass the test.

48. *Definitions of abstract terms: What is charity? Justice? Goodness?*

To pass this test two of the three definitions must be acceptable. At eight or nine years very few children give acceptable definitions; at ten about one-third do; at eleven most children do.

49. *Arranging words in a sentence: "Make a sentence out of these words."*

Hour — for — we — good — at — park — a — started — the.
To — asked — exercise — my — teacher — correct — my — I.
A — defends — dog — good — his — courageously — master.

The printed card is placed before the child. He gives the sentences orally. Time limit is one minute for each sentence. At least two must be given correctly.

Children of Twelve Years.

50. *Repetition of seven figures:* 2, 9, 4, 6, 3, 7, 5. — 1, 6, 9, 5, 8, 4, 7. — 9, 2, 8, 5, 1, 6, 4.

Tell the child there will be seven figures. Give three trials. One success is sufficient.

51. *Finding rhymes.*

Explain what is meant by one word rhyming with another and illustrate by means of examples. Then ask the child to give as many words as he can think of that rhyme with a given word: *day*, or *spring*, or *mill*. One minute is allowed. Three rhymes to one word should be found in the given time.

52. *Repetition of a sentence of twenty-six syllables.*

See Test 2.

53. *Conclusions from evidence.*

A person who was walking in the park stopped in fright and ran to the nearest policeman, saying that he had just seen hanging from the branch of a tree a (after a pause) *what?*

My neighbor has been having strange visitors: first a doctor, then a lawyer, then a priest. What has happened at the house of my neighbor?

To pass this test both questions must be answered correctly.

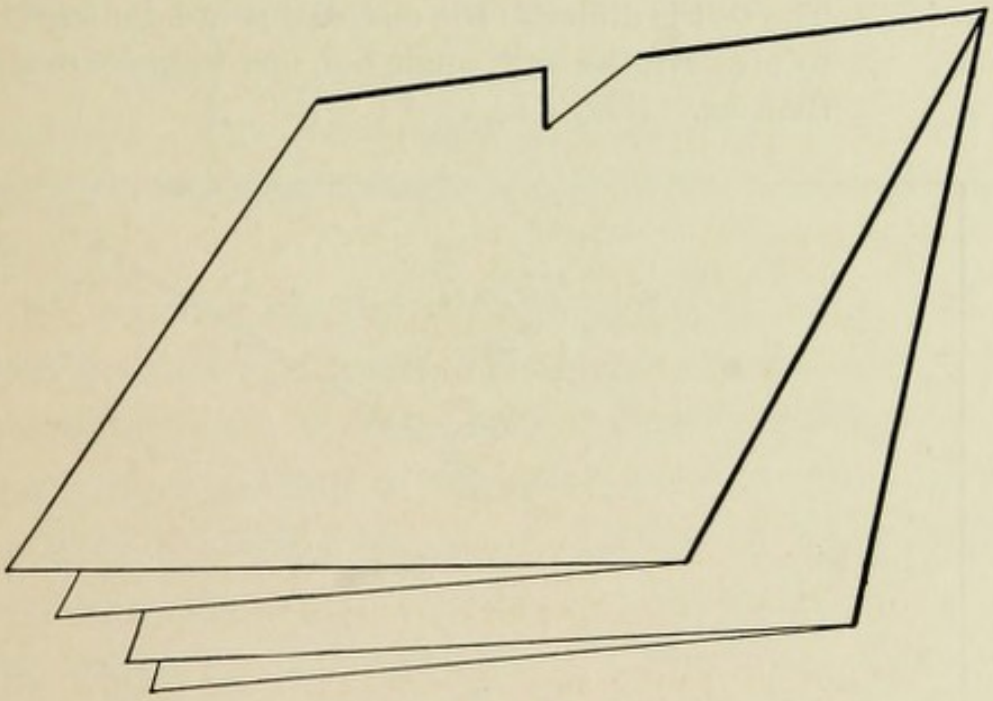


FIG. 12.

CHILDREN OF THIRTEEN YEARS.

54. *Imagery of form.*

The child is directed to watch carefully as the examiner slowly folds a sheet of paper in four and then cuts out a small triangular piece from one edge — the edge which does not open (Fig. 12). The child is asked

to draw a picture of the paper as it will look when unfolded. Unfolding the cut sheet or folding another sheet is not allowed. This test is a difficult one. If a child does it the first time he should be asked if he has seen it before.

55. *Imagery of form.*

A visiting card is cut diagonally in two and, with the two halves apposed as originally, is placed on the table before the child. The following task is then given him: "*Look carefully at this card, especially at this* (lower) *half. Suppose we should turn this half upside down, and place this corner* (c) *touching this point* (b) *so that this edge* (bc) *shall touch this edge* (ab), *what would the whole figure look like then? Now, I am going to pick up this lower half. I want you to imagine it turned over and laid up against the upper half as I have said. Draw the whole figure for me as it would look then. Begin with the upper half that you see before you.*" The test is difficult; the essential points for success are to preserve the right angle *bca*, and to make *cb* shorter than *ba*. (Fig. 13.)

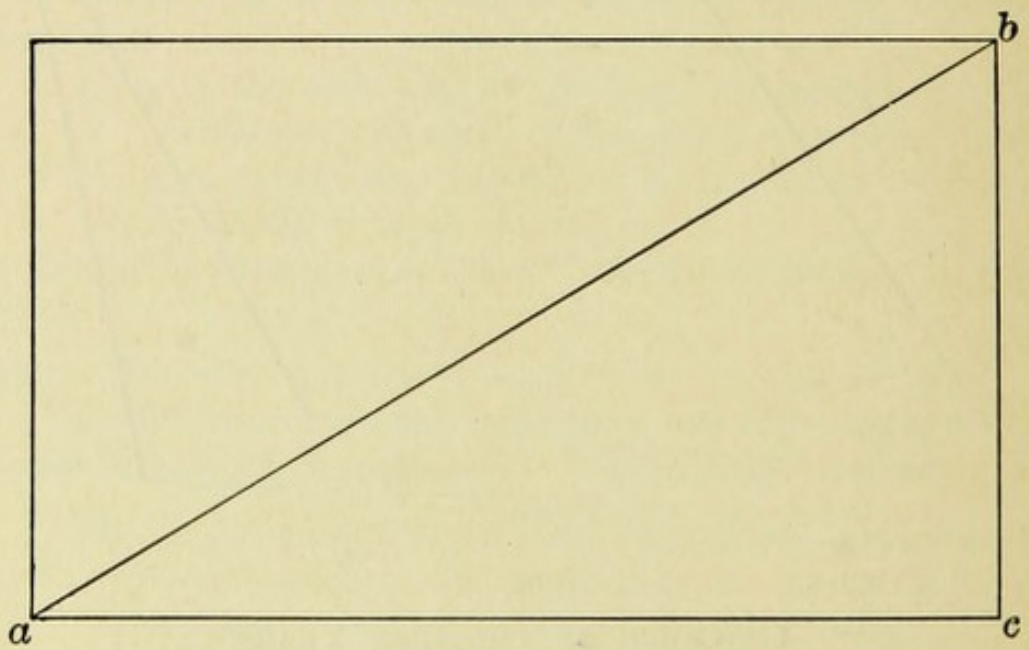


FIG. 13.

56. *Distinctions between abstract terms.*

What is the difference between pleasure and happiness? Between evolution and revolution? Between event and advent? Between poverty and misery? Between pride and pretension?

The tests should be conducted in a quiet room as free as possible from distracting influences. The subject, if doing poorly in the tests, should not be given to understand that, but should be frequently encouraged and made to feel at ease.

As has already been stated the results of these tests lead to a rating of the subject's intelligence in terms of the age at which such intelligence, as shown by many trials, corresponds with the normal average.

In practice one finds a good deal of irregularity in the results; children frequently respond correctly to some tests of a higher age and fail to do so to some tests of a lower age. For summary ratings Binet and Simon recommend the following rules: (1) *The mental development of a subject is rated at the highest age in the tests of which he has succeeded with not more than one exception.* (2) *For every five tests passed above the age level as determined by the first rule one year is added.*

In interpreting the results of these tests one must bear in mind the great differences which exist between normal subjects in rate and degree of mental development. A variation of one or even two years from the age level of intelligence as established by these standards is by no means to be regarded as necessarily pathological. But departure of three years or more below these standards is, of course, of much greater significance from the pathological standpoint, as may be judged from the following tables representing the results obtained by Binet and Simon[1] from French children, both normal

[1] *Loc. cit.*

and defective, and by Goddard[1] from a much larger group of children selected at random from the first five grades in a typical public school system; Goddard's subjects were for the most part American, some few were Jewish and some Italian.

203 Normal French School Children.

Retarded.		At Age.	Advanced.	
2 Years.	1 Year.		1 Year.	2 Years.
12	44	103	42	2

14 French School Children rated in Accordance with School Standards as being Three Years below their Grades.

Retarded.							At Age.	Advanced.
5 Yrs.	4 Yrs.	3½ Yrs.	3 Yrs.	2½ Yrs.	2 Yrs.	1 Yr.		
1	1	3	2	1	2	4	0	0

1547 School Children, for the Most Part American, selected at Random.

Retarded.							At Age.	Advanced.			
7 Yrs.	6 Yrs.	5 Yrs.	4 Yrs.	3 Yrs.	2 Yrs.	1 Yr.		1 Yr.	2 Yrs.	3 Yrs.	4 Yrs.
1	6	8	37	79	156	312	554	329	49	14	2

[1] Kindly furnished by Dr. Henry H. Goddard of The Training School for Backward and Feeble-minded Children at Vineland, N. J.

These striking results substantiate the claim that this series of tests constitutes a measuring scale of intelligence.

It is hardly necessary to speak of the possible usefulness of such a measuring scale. Binet and Simon themselves suggest some fields in which the employment of their measuring scale may prove useful: (1) as a guide in the medico-pedagogic treatment of the feeble-minded; (2) in some cases in determining the degree of criminal responsibility; (3) in the examination of army and navy recruits, the practice heretofore having been thorough as regards physical fitness for service but not sufficiently so as regards mental fitness.

In the United States where the problem of preventing the immigration of mental defectives is one of great and growing importance this measuring scale should be of service in determining the deportability of any immigrant.]

The principal indications for *treatment* are: to develop the subject's *attention*, and to give a proper direction to the automatism which dominates his reactions. This aim is unfortunately more easily pointed out than attained. Considerable success has, however, been obtained in recent times by means of special methods of education.

§ 2. Moral Insanity.

By reason of its complexity the moral sense is one of the most delicate and most vulnerable functions of the mind. Thus we find it altered in most of the psychoses, especially in those accompanied by intellectual enfeeblement.

The symptoms which alterations in the moral sense give rise to do not merit the name of *moral insanity* unless they exist in an isolated state or at least are not associated with any other apparent mental disorder. I say *apparent*, because close observation almost always reveals the existence in the subject of certain physical and psychic peculiarities which show that the anomaly extends beyond the moral sphere.

Moral insanity finds early expression in perversities of the character and conduct. The child is naughty, cruel, deceitful, irritable, violent; or he is, on the contrary, taciturn and dissembling.

Education totally fails to modify such natures. The moral sense is not built up upon notions acquired through intellectual culture. It is the result of a special sensibility, of a function which the psychic organ lacks in moral insanity. "When this apparatus is absent, the most favorable surroundings fail to exert their influence."[1]

As the child becomes a man, as he comes into more direct contact with society, his infirmity becomes more manifest.

The dominant feature of moral insanity is profound egoism combined with complete indifference with regard to good and evil.

The exclusive aim of such an individual is his pleasure or his own interest (and very often he has but poor judgment as regards even his own interest), and to reach this aim he does not hesitate to use any means or any expedient. He has neither sentiment of honor nor

[1] Bleuler. *Der geborene Verbrecher. Eine kritische Studie*, 1896, p. 21.

respect for the truth. His unique preoccupation is to escape conviction and punishment.

Cruel and malicious toward his inferiors and toward the weak in general, he is cowardly toward anybody who is above him. In the asylum or prison he quite readily submits to the rules and to the discipline and does not abandon himself to his morbid propensities until he regains his liberty.

Undoubtedly there are cases of moral insanity with a sane judgment and a strong will. These, freed from the scruples which might interfere with their liberty of action, occasionally have a brilliant career.

Almost always, however, other psychic anomalies are present in addition to the disorders of the moral sphere. The most frequent are:

(*a*) *Weakness of judgment:* the subject realizes but imperfectly the possible consequences of his acts, and in spite of all his precautions he ultimately comes into conflict with the law. The thoughtlessness of criminals is well known.

(*b*) *Absence of perseverance:* this prevents the utilization of any aptitudes which the patient may possess and which are in some instances very considerable.

(*c*) *Impulsiveness:* the moral insane readily yield to the first impulse, so that it is quite difficult in practice to distinguish them from the impulsive criminals. The best criterion is the existence of subsequent *remorse* in the latter. Unfortunately, it is impossible to determine its true degree of sincerity. It is well known with what consummate art hardened criminals simulate the most touching remorse.

(*d*) Diverse psychic anomalies: *obsessions, morbid emotionalism,* etc.

The physical signs of degeneration are frequent.

Commitment is in most cases necessary. Agricultural colonies, properly conducted, are admirably suited for this class of patients. Moral treatment, properly so called, has no effect.

[CHAPTER XVIII.

PREVENTION OF INSANITY. HYGIENE OF THE MIND.

Sixty years ago, when Griesinger spoke of the multiplicity of causes in psychiatry, but little was known of the genesis of the various psychoses. Since then our knowledge has been enriched so that, while we still recognize a multiplicity of causes, we are in a position to distinguish amongst them *essential* causes and *incidental* or *contributing* causes.

The *essential* causes are but few: the most important are heredity, alcoholism, syphilis, and head injuries. Each of these alone may produce mental alienation or it may render the nervous organization so vulnerable that a breakdown will occur at the occasion of some incidental cause which may be in itself quite insignificant but which here comes to play the rôle of "the last straw that broke the camel's back."

The *incidental* or *contributing* causes are innumerable, for almost any disturbing influence, no matter how slight, may determine an outbreak of insanity in the presence of one of the essential causes. Some, however, are met with in practice with special frequency and therefore seem to possess quasi-specific potency in the production of mental alienation; as being among these may be mentioned unhappy love affairs, pregnancy,

abortion, childbirth, lactation, domestic troubles, overwork, business reverses, fright or other emotional shock, grief, and slight indulgence in alcohol.

There are few persons, if indeed there are any, who are so fortunate as to go through life without being repeatedly subjected to the influence of some of these incidental causes: the prevention of insanity consists largely in measures for combating the essential causes, — heredity, alcoholism, syphilis, and head injuries.

Measures for the prevention of insanity may be undertaken by the individual or by society. As far as the average healthy individual is concerned the measures are few and simple; it must, however, be noted as a fact which has been repeatedly demonstrated under the most varied conditions, that the great mass of individuals, even if made fully aware of all dangers, will not practice preventive measures in any systematic manner; this is perhaps due to a curious trait of human nature owing to which men are disinclined to believe that any evil may befall them and therefore have a tendency to take chances; further it must be remembered that the great causes of insanity appear in the shape of strong temptations which are difficult and for some impossible to resist. However this may be, those who are concerned with the problem of the prevention of insanity would be impractical if they relied entirely upon dissemination of knowledge on this subject among the people with the hope of thus reducing to a material extent the incidence of insanity or of checking the progress of its increase. Dissemination of knowledge should, I believe, be regarded as a preliminary step which will make possible the application of large measures by society as a whole, — and

nothing less than that constitutes an effective system of mental hygiene.

The object of this chapter is not to suggest measures that might be tried, but to present a summary of measures that have been tried with more or less success.

§ 1. Heredity.

The fact that the neuropathic constitution is, like many other traits, transmissible by heredity has long been known. The exact conditions under which such constitution is transmitted are, however, not yet clearly understood. Therefore it is obvious that the first need is that of further *investigation*. Biological research has already shed much light on the subject of heredity in general, but the relation of heredity to mental alienation remains a subject for special research. Organized efforts in this direction are being made in England by the Francis Galton Laboratory for National Eugenics at the University of London, and in the United States by the Eugenics Section of the American Breeders' Association with the coöperation of some institutions for the insane, epileptic, and feeble-minded. Experience seems to show that the best method of collecting data for such investigations consists in the employment of trained visiting field workers who obtain from the relatives, friends, neighbors, and family physicians of patients detailed pedigrees of the families.

Laws prohibiting the marriage of defectives have been passed in some states (Connecticut, Delaware, Indiana, Kansas, Michigan, Minnesota, New Jersey, North Dakota), but it is difficult to estimate the exact amount of

benefit that has been derived from such legislation. In the first place it has not been rigidly enforced, as may be seen from the following quotation: "Of the total number of male patients received during the period who had attained the age of twenty-one years at the time of admission 30 per cent had been married, and of the females eighteen years of age 56.8 per cent had been married. Of these married epileptics, 25 per cent of the men and 40 per cent of the women had married after the development of epilepsy."[1] In the second place marriage is not necessary for propagation. Moreover, even if it were possible to fully enforce such laws the problem would be but partly solved; for the neuropathic make-up is well known to be transmissible to posterity through one or more generations of persons who are themselves healthy but who nevertheless carry the taint from their ancestors in their germ plasm (atavistic heredity).

For the neuropathic individual or for the one who, though himself normal, may yet be judged from a study of his family history to carry the neuropathic taint, measures for the *prevention of conception* have been advocated, especially by Forel: "Anticonceptional measures also allow unfortunate pathological individuals, whose social and moral duty is to avoid procreation, to satisfy their sexual desire without the fear of bringing into the world miserable abortions, idiots, or invalids." — "If the objection is raised that egoists of both sexes profit by these measures to avoid procreation of children,

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[1] M. L. Perry. *Third Biennial Report of the Parsons State Hospital for Epileptics*, Parsons, Kansas.

I repeat once more, that this is not to be regretted. Men who possess social sentiments and wish to have children, will procreate all the more healthy members of society. What we have most to fear for the future of humanity is the want of social sense, or altruism."[1] Unfortunately the "social and moral duty" is not always scrupulously fulfilled by neuropathic individuals.

By far more certain is *sterilization* by vasectomy or salpingectomy or by castration.

Castration has been practiced in some cases with the consent of the patients and their relatives. The following case is of interest.[2]

Girl of twenty-five years, suffered from epilepsy with occasional severe attacks of delirium; had pronounced nymphomania which had twice led to pregnancy. The children are epileptic and feeble-minded and are cared for in a local charitable institution. The patient, physically strong, had been two years in the asylum where she had to be carefully watched on account of her nymphomania; she urged the authorities to discharge her as she was capable of supporting herself. It was suggested to her that she submit to castration, the nature and object of the operation having been fully explained to her. She agreed immediately. Her relatives having also given their consent she was castrated by a gynecological surgeon. Since her discharge half a year ago she has earned her living outside and " is satisfied with her condition."

In the State of Indiana *legislation* has been enacted providing for the sterilization of defectives and criminals, and a report has been made of 456 cases of vasectomy

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[1] Aug. Forel. *The Sexual Question.* English Adaptation by C. F. Marshall. New York, 1908. Rebman Company.

[2] 16. Jahresbericht des Kant. Asyles in Will, 1908. Quoted by P. Näcke. *Die ersten Kastrationen aus sozialen Gründen auf europäischen Boden.* Neurol. Centralbl., March 1, 1909.

performed in compliance with that law at the Indiana Reformatory. This operation can be done easily with local anæsthesia. "There is no diminution of the sexual power or pleasure. The discharge at orgasm is but slightly decreased." [1]

Salpingectomy is, of course, a more elaborate operation requiring general anæsthesia; but under conditions of surgical asepsis and with a little experience it can be performed practically without danger to the patient.

Aside from the benefit of such prophylactic measures to posterity and to society, it may be pointed out that the subjects may also be benefited in various ways, but especially through freedom from the burden of parenthood, the many phases of which figure so prominently among the contributing causes of mental alienation.

§ 2. Alcoholism.

Between heredity and alcoholism as causes of mental alienation there is apparently a good deal of interdependence, so that measures effective in combating bad heredity should prove to some extent effective in combating alcoholism as well. But there are also special measures against alcoholism which may be employed by the individual and by society.

Abstinence. — The most trustworthy experimental data show that even moderate indulgence in alcohol, though producing in the subject a sense of well-being and of increased physical and mental ability, in reality causes impairment of muscular power and coördination and of

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[1] H. C. Sharp. *Vasectomy as a Means of Preventing Procreation in Defectives.* Journ. Amer. Med. Ass'n, Dec. 4, 1909.

mental efficiency.[1] In persons of neurotic constitution comparatively slight indulgence often causes severe mental disturbance.

Those who favor temperance rather than abstinence do so mainly on the basis of the usefulness of alcohol as a food and as a sedative contributing to the recuperative effect of rest by promoting complete relaxation. It is not to be disputed that alcohol does possess these beneficial qualities, but it is not possible to derive the benefit and yet escape the harm from using it. Moreover moderate indulgence, if regular, leads but too often to the development of uncontrollable craving, increase of dosage, and ultimately to chronic alcoholism. It need hardly be added that alcohol either as a food or as a sedative is not a physiological necessity.

Therefore the advice to the individual must always be: *complete abstinence without compromise.*

Of measures that may be employed by society the most important is *dissemination of the knowledge of the true effect of alcohol,* which should constitute a part of the program of all public schools. It is necessary before all to dispel the prevailing notions that alcohol is harmful

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[1] L. Schneider. *Alkohol und Muskelkraft.* Pflügers Arch. f. d. ges. Physiol., Vol. 93, p. 451. — M. Mayer. *Ueber die Beeinflussung der Schrift durch den Alkohol.* Kraepelins Psychol. Arb., Vol. III, p. 535. — G. Aschaffenburg. *Praktische Arbeit unter Alkoholwirkung.* Kraepelins Psychol. Arb., Vol. I, p. 608. — A. Smith. *Ueber die Beeinflussung einfacher psychischer Vorgänge durch chronische Alkoholvergiftung.* Br. üb. d. V. intern. Kongr. z. Bekämpf. d. Missbr. geist. Getränke. Basel, 1896, p. 341. — E. Kürz and E. Kraepelin. *Ueber die Beeinflussung psychischer Vorgänge durch regelmässigen Alkoholismus.* Kraepelins Psychol. Arb., Vol. III, p. 417.

only when taken in excess and that, taken in moderation, it is beneficial and even necessary to the laborer or artisan.

The next in importance are *legislative measures.* As having been actually proved to be in some degree effective may be mentioned: (1) The Gothenburg system, (2) prohibition, and (3) local option.

The Gothenburg system was first instituted in Sweden, and has since been adopted by Norway and Finland. The Swedish Law of 1855 gives to each municipality the right of prohibiting within its jurisdiction the sale of liquor over the bar or in stores in quantities under forty liters. Retail licenses in limited number — according to population — are awarded by the municipal authorities at public sale to the highest bidder, provided he be a person of good reputation. The law provides further that retail licenses may be awarded to societies, thus making it possible for public-spirited citizens to form organizations for the purpose of securing the licenses which are at the disposal of the municipal authorities and thus assuming control of the entire retail liquor trade. Thus was founded for the first time in the city of Gothenburg "The Gothenburg Retail Liquor Stock Company." This and other similar companies derive, of course, no profit from the trade, the profits going in part (60–80%) into the city treasury and in part (20–40%) into the state treasury. The aim of such companies, in contrast with that of private liquor dealers, is to reduce the consumption of liquors; for that purpose they have established popular-price restaurants, reading rooms, etc. for working people.

This system is imperfect in that it fails to control

the sale of fermented beverages, affecting only that of distilled liquors. However, a special investigating committee appointed by the municipal authorities of Gothenburg in 1899 has recommended the extension of the system to embrace the control of beer saloons.

In spite of the shortcomings of this system, which are more easily pointed out than remedied, it stands as the most effective and most practical system that has yet been devised, as the following results will show.[1]

Prior to 1855 liquor could be purchased in Sweden almost in any cottage. In 1869 there was only one barroom or liquor store to 8028 inhabitants; in 1880 only one to 13,450 inhabitants.

There are 2400 separate municipalities in Sweden; of these 1800 have entirely abolished barrooms and retail liquor stores.

The consumption of liquor in Sweden in 1824 was 46 liters per capita, in 1851 it was 22 liters, and in 1896 it had become reduced to 7.2 liters.

Prior to enactment of the laws of 1855 from 25% to 30% of all male cases admitted to hospitals for the insane were due to intemperance. Following the enactment of those laws this percentage gradually became less, and from 1865 until 1899 it varied between 5.2% and 7.19%.

It should be added here that recent statistics from other countries show that the percentage of cases of insanity in which alcoholism is the cause approaches that of the older Swedish statistics: State of New York,

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[1] A. Baer and B. Laquer. *Die Trunksucht und ihre Abwehr.* Berlin and Vienna, 1907.

31.4%;[1] State of Massachusetts, 30.6%;[2] Staffordshire County, England, 26.3%;[3] Lower Austria, 24.9%.[4]

The introduction of the Gothenburg system into Norway and into Finland has been followed by results similar to those obtained in Sweden.

Prohibition has been tried in several states. In some of these states the prohibition laws have been repealed (Connecticut, Vermont, Massachusetts); in others they have been but recently enacted (Alabama, Georgia, Oklahoma); in still others they have been in force for many years (in Maine since 1851, in Kansas since 1880, in North Dakota since 1889), so that they may be assumed to have been given a thorough practical trial.

It must be observed that owing to the operation of the Interstate Commerce Law a state cannot prohibit the importation of liquors from other states. This circumstance together with the practical difficulties of enforcing prohibition laws reduces materially the possible effectiveness of such laws.

Nevertheless it has been amply shown that crime and pauperism have been reduced wherever prohibition laws have been enacted.[5]

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[1] Report of the State Commission in Lunacy for the year ending Sept. 30, 1909.

[2] From reports of the state hospitals at Tewksbury, Taunton, Worcester, Westboro, Northampton, and Danvers for the year ending Nov. 30, 1906.

[3] Report of Staffordshire County Council for the year 1904.

[4] Bericht des Niederösterreichischen Landesausschusses über seine Amtswirksamkeit vom 1. Juli 1902 bis 30. Juni 1903.

[5] Year Book of the Anti-Saloon League, 1908. — Twenty-sixth Annual Report of the Massachusetts Bureau of Labor. Boston, 1896. — Twenty-seventh Annual Report of the Massachusetts State Board of Charities, 1907.

Unfortunately the effect upon insanity is not so obvious. We find that in the State of Maine 21.4% of all male cases admitted to the hospitals for the insane (not counting the cases in which the causes were unascertained) are due to alcoholism,[1] — a figure which is but slightly below those of license states. It is clear that this slight difference may possibly be due not to prohibition but to other causes.

Local option seems to be a much more popular measure than state prohibition. It is estimated that only 10% of the population of the United States is living under state prohibition, while more than 75% is living under local option, and that over 40% of those living under local option are in "dry" territory.[2]

Thus local option, as compared with prohibition, seems to possess the advantage of being more acceptable to most communities and therefore more practicable.

The effect of no license under local option is similar to that of prohibition; that is to say, drunkenness, crime, and pauperism are undoubtedly reduced, but the incidence of insanity is but slightly, if at all, affected.

The following table shows the reduction of drunkenness which resulted from no license under local option in several cities in Massachusetts.

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[1] Reports of the Maine Insane Hospitals for the year ending Nov. 30, 1909.

[2] Year Book of the Anti-Saloon League, 1908.

Cities.	Arrests for Drunkenness.			
	License.		No License.	
	Year.	Number of Arrests.	Year.	Number of Arrests
Brockton	1898	1627	1899	455
Waltham	1900	634	1901	179
Taunton	1901	1202	1900	482
Chelsea	1902	1246	1901	398
Newburyport	1901	673	1902	150
Lowell	1902	4077	1903	2304
Salem	1903	1432	1904	503
Woburn	1903	842	1904	204
Fitchburg	1905	1160	1906	359

§ 3. Syphilis.

The microörganism of syphilis, *Spirochæte pallida*, is strictly parasitic. On being discharged from the body it soon perishes and becomes innocuous, so that infection through the medium of table dishes, public drinking cups, barbers' razors, etc., can be contracted only by contact with the utensil immediately following its use by a syphilitic person. Lower animals do not have syphilis, though in recent years monkeys have been successfully inoculated experimentally. Therefore from the bacteriological standpoint syphilis should be more readily preventable than any other common infectious disease. The problem of its prevention is, however, complicated by certain sociological features which still await solution and which render this disease so prevalent a plague of mankind.

Syphilitic infection, as is well known, may be of non-venereal as well as of venereal origin. Thus of 887

cases reported by Fournier[1] 45 were of non-venereal origin, among these being cases of inherited syphilis, of infection of wet-nurses by sucklings, midwives by women in labor, etc. Of the cases of venereal origin not all result from immoral relations. Thus Fournier[2] estimates that of all cases in women the infection is in 19 per cent acquired by married women from their husbands. But even in cases in which the infection is acquired innocently it can usually be traced indirectly to immoral sexual relations, particularly to prostitution, as its original source.

The prevention of syphilis is therefore closely linked to the prevention or control of prostitution.

Prostitution cannot be studied as an independent phenomenon; on the contrary, like the commerce of any commodity it seems to vary and fluctuate in accordance with the general principles of demand and supply. Thus we find it flourishing in large industrial centers and in seaport towns, but rare in residential towns and almost unknown in farming communities. We can follow its rise and decline in response to rise and decline of the demand in towns in which armies in the course of their maneuvers arrive to be stationed for a time and then proceed elsewhere. Where the demand is steady prostitution becomes organized, brothels are established, proxenetism appears. It may be further noted that the demand is greater for some classes of men — soldiers, sailors, traveling salesmen, railroad employees — than for others. Thus, for instance, in the U. S. Navy and

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[1] Fournier. *The Treatment and Prophylaxis of Syphilis.* English translation by C. F. Marshall. New York, 1907. P. 348.

[2] *Loc. cit.*, p. 351.

Marine Corps out of 697.29 admissions to the sick list per thousand of average strength of the service, 199.17 were for venereal disease, and the remaining 498.12 were for all other diseases and injuries.[1] When it is considered that in most cases venereal disease does not necessitate admission to the sick list and that, therefore, these figures represent but a fraction of the total amount of venereal disease, some idea of the real incidence of such disease in the Navy and Marine Corps can be formed.

Why should prostitution be so much more prevalent in some communities than in others? Why should certain classes of men suffer so much more than others from venereal disease? It seems to me that a mere presentation of the facts reveals the cause, and it may be assumed as a general principle that *any factor which interferes with the institution of marriage and the organization and maintenance of homes will bring about aberration of the sexual instinct leading to immoral relations, promiscuous relations, prostitution, venereal disease, and ultimately to certain forms of nervous disease and insanity.*

It is easy to see how modern civilization by increasing the cost and at the same time raising the standard of living; by the inadequate compensation of labor; by the maintenance of armies and navies; and by some smaller factors, such as the preference given by governments, municipalities, and industrial organizations to unmarried employees over married ones, accounts in part for the increase of insanity, and we can now fully grasp the

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[1] M. F. Gates. *The Prophylaxis of Gonorrhœa.* The Therapeutic Gazette, Jan., 1911.

significance of Krafft-Ebing's celebrated epigram: "General paresis is a disease of civilization and syphilization."

To what extent can prostitution be controlled?

First of all it must be noted that at no time has any state or nation succeeded in abolishing prostitution, and in 1902 a Committee of Fifteen organized in New York for the purpose of investigating the social evil were led in their report to express the view that the summary extirpation of prostitution "in the present state of the moral evolution of the race, is as yet impossible."[1]

In some municipalities prostitution is by the law classed as a crime and is punishable as such. In others it is licensed and regulated with a view to providing sanitary inspection. Neither system has effected either actual control of prostitution or any material reduction of the incidence of venereal disease. The Committee of Fifteen suggests the following as the proper attitude for the law: "Not prostitution itself, when withdrawn from the public eye so as to be noticeable only to those who go in search of it, shall be punishable; but all such manifestations of it as belong under the heading of public nuisance."[2] In accordance with this principle the law may punish street soliciting, proxenetism, the establishment of brothels in tenement or apartment houses, etc.

There remains one thing, namely, the prevention of syphilis without reference to prostitution by measures which have been so successful in the prevention of other communicable diseases; that is to say, the compulsory reporting of all cases of syphilis, regardless of the manner

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[1] *The Social Evil.* New York, 1902. (G. P. Putnam's Sons.) P. 178.

[2] *Loc. cit.*

or source of infection, and their hospitalization, if necessary, during the periods of greatest infectiousness.

Owing to the fact that during the primary and secondary stages — the periods of greatest infectiousness — syphilis does not generally incapacitate the patient, treatment in a hospital is not sought and facilities for it are not provided. Thus the Committee of Fifteen reports "that the great city of New York provides for the reception of women suffering from venereal diseases only twenty-six beds in the City Hospital on Blackwell's Island."[1] Another difficulty lies in the fact that the period of possible infectiousness may be very long, — three years or longer.

The recent discovery by Ehrlich and Hata of a remedy which is apparently much more efficacious than mercury or iodides, namely, *dioxy-diamido-arseno-benzol*, also known as "606" or "*salvarsan*," bids fair to become a more potent means of preventing syphilis than any that we have heretofore possessed. Although it is as yet too early to tell whether "salvarsan" completely and permanently cures syphilis or whether it affects in any way the prospect of the development of para-syphilitic or post-syphilitic conditions, extensive experience has already shown that in almost all cases it causes the prompt disappearance of the *Spirochæte pallida* from all lesions that are accessible to examination, which is followed by rapid healing of the lesions themselves.[2] In about half of the cases the Wassermann reaction becomes

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[1] *Loc cit.*, p. 175.

[2] Neisser and Kutznitzky. *Berl. klin. Wochenschr.*, 1910, No. 32. —Herxheimer. *Münch. med. Wochenschr.*, 1910, No. 33. —Spiethoff. *Münch. med. Wochenschr.*, 1910, No. 35.

negative after a period varying from two to ten weeks following one or two injections.[1] Thus there is ground for hope that the infectious period of syphilis will be reduced by means of this remedy from several years to but as many weeks, thus rendering the hospitalization of cases of syphilis entirely practicable.

Two other measures of prophylaxis against syphilis deserve special mention: measures that may be employed within twelve or eighteen hours following exposure to infection, and measures for the prevention of inherited syphilis.

It has been shown by Metchnikoff and Roux[2] that in monkeys local inunction with calomel ointment applied within one hour after experimental inoculation prevents infection in all cases, while control animals invariably develop a chancre at the expiration of the usual period of incubation. Later a pupil of Metchnikoff submitted to experimental inoculation, followed in an hour by prophylactic inunction, and failed to become infected; at the same time four monkeys were inoculated with the same virus: one received the prophylactic inunction after an hour and failed to become infected; another received the inunction at the end of twenty hours: this one as well as the remaining two, which did not receive the inunction, became infected.

Numerous opportunities of testing this prophylactic treatment have since occurred and the results seem to prove it to be of almost unfailing efficacy according to reports of some medical officers of the U. S. Navy. Thus

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[1] Kromayer. *Berl. klin. Wochenschr.*, 1910, Nos. 34, 37, and 39.

[2] Quoted by L. W. Harrison in *A System of Syphilis*. Edited by Power and Murphy. London, 1910. Vol. VI, p. 137.

Diehl, Fleet Surgeon of the U. S. Asiatic Fleet, submits the following statistics in his report for the year 1909.[1]

Number of men who upon return from liberty failed to report and received no treatment	5,319
Number who developed venereal disease	113 (2.12%)
Number who upon return from liberty admitted exposure and received treatment	21,166
Number of these who developed venereal disease attributed to delay of treatment on account of overstaying of liberty or extended liberty	225
Number who developed venereal disease attributed to failure of prophylactic treatment	176 (0.83%)

It is pointed out, however, that "in some instances supervision of treatment lacked thoroughness" and that "with a greater familiarity with and more thorough application of the scheme, the failures, pure and simple, will be greatly reduced." This opinion seems to be fully borne out by the reports from the *U. S. Steamships, Galveston, Ranger*, and *Tacoma* of 281, 256, and 756 exposures, respectively, in various notoriously infected ports, followed by prompt and thorough prophylactic treatment without the development of venereal infection in any case but two of gonorrhœa in men who overstayed liberty.[2]

As to the prevention of hereditary syphilis, syphilitics should be advised not to marry until they have had three years of methodical treatment, or, if the treatment has been neglected or irregular, until five years have elapsed from the onset of the disease: and then only if

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[1] Quoted by C. N. Fiske in *A System of Syphilis*. Edited by Power and Murphy. London, 1910. Vol. VI, p. 308.

[2] M. F. Gates. *The Prophylaxis of Gonorrhœa*. The Therapeutic Gazette, Jan., 1911.

no contraindication is found upon examination. It is needless to add that in most cases no attention is paid to such advice. Yet it is remarkable that a radical change often occurs in a syphilitic, with regard to his attitude toward his disease, after marriage. Thus Fournier states: "We are consulted by a syphilitic who is about to become a father, and who asks us whether something cannot be done to prevent his child from inheriting the disease. This is not an uncommon situation — indeed, from my personal experience, I should say that even if the syphilitic takes but little care of his disease before marriage, he is very apprehensive of it as soon as he is about to become a father. This is a curious phenomenon in psychology which I have observed hundreds of times."[1]

For the prevention of hereditary syphilis in such cases Fournier gives the following rule: "When a woman is pregnant with a child threatened, by paternal antecedents, with syphilitic heredity, syphilitic treatment of the mother, although healthy, constitutes for this child a real and powerful safeguard for which there is a precise and formal indication."[2]

§ 4. Head Injuries.

There is but little to be said with reference to head injuries which, like other injuries resulting in either disability or death, have become common as a result of the great modern development of industries, means of transportation, etc. It may be pointed out, however, that in

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[1] Fournier. *The Treatment and Prophylaxis of Syphilis.* English translation by C. F. Marshall. New York, 1907. P. 443.

[2] *Loc. cit.*, p. 447.

the United States, owing, probably, to imperfect legislative protection, serious accidents are needlessly frequent, as may be judged from the example furnished by American and British railroad statistics. These, for the year 1906,[1] are given in the following table.

	American Railroads.	British Railroads.
Total number of passengers carried	800,000,000	1,200,000,000
Total miles of track	200,000	27,000
Number of collisions and derailments	13,455	239
Number of passengers killed	146	58
Number of passengers injured	6,000	631
Number of employees killed	879	13
Number of employees injured	7,483	140

§ 5. The Individual.

From what has already been said it follows that an individual who comes from normal stock, abstains from alcohol, is free from syphilis, and escapes accidental head injury is not threatened with mental alienation.

It is not so with the neuropathic individual: for him every feature of life in society presents possible dangers. From childhood up the adjustment between him and his environment must be nicely controlled if the danger of a mental breakdown is to be minimized; his bringing-up at home, his education at school, his sexual life, his career, his social and family relations are great matters for special adjustment, particularly with the ends in view of proper habit training, avoidance of incidental causes referred to in the beginning of this chapter as possessing quasi-specific potency in the production of

[1] J. O. Fagan. *Confessions of a Railroad Signalman.* Boston and New York, 1908.

mental alienation, and prompt institution of treatment upon the appearance of any symptoms.

It is obvious that the recognition of the neuropathic make-up is of the highest importance. In cases of pronounced feeble-mindedness, frank insanity, epilepsy, or well-marked hysteria no difficulty is experienced, the condition being apparent even to a lay person. In other cases in which a lay observer may notice mental dullness, or eccentricity, or criminal tendency a systematic inquiry by an experienced alienist may reveal evidence of one of the special types of abnormal make-up which have been described in connection with dementia præcox and manic depressive insanity (pp. 255 and 363). The application of the Binet and Simon tests may aid in the detection of high grades of imbecility, and the association test has in some cases revealed evidences of mental abnormality not otherwise observed: "Mental disorders do not always so manifest themselves as to incapacitate the subject for his work or to necessitate his sequestration in a hospital for the insane. It is therefore not surprising that in applying the association test to over a thousand subjects selected at random we have obtained a small number of test records which show various types of abnormal reactions. Among the subjects who furnished such records some are described as eccentric, taciturn, or dull, while others are apparently normal but come of neuropathic stock."[1] Finally, in still other cases the neuropathic make-up or taint may exhibit no symptoms and may be only surmised to exist on the basis of a neuropathic family history.]

[1] Kent and Rosanoff. *A Study of Association in Insanity.* Amer. Journ. of Ins., July and Oct., 1910.

[APPENDIX.

TECHNIQUE OF THE WASSERMANN REACTION ACCORDING TO THE METHOD OF NOGUCHI.[1]

§ 1. The Principles of the Wassermann Reaction.

When blood corpuscles of an animal of a given species are injected into an animal of a foreign species the blood serum of the second animal develops the power of destroying the corpuscles of animals of the first species, that is to say, a *specific hæmolytic power*.

When the serum of an animal thus immunized is heated for an hour at 56° C., or when it has been allowed to stand at room temperature for twenty-four hours, it loses its hæmolytic power, technically it is said to have become *inactivated*. It may, however, be *reactivated*, that is to say, its hæmolytic power may be restored, by the addition from another animal, — one which has not been immunized and the serum from which, therefore, does not by itself possess hæmolytic power.

It is concluded from these facts that the hæmolytic power of the serum of an immunized animal is dependent upon two substances: one which is chemically unstable (being easily destroyed by moderate heat or by standing at room temperature) and non-specific (being present in fresh serum of non-immunized animals as shown by reactivation), and another which is chemically stable (resisting the effect of moderate heating, etc.) and strictly specific (being present only in the serum of animals which have been immunized by injections of corpuscles). The first substance is called *complement*, the second *amboceptor*.

For specific hæmolysis to occur, then, the following ingredients are required, constituting a *hæmolytic system:*

blood corpuscles + complement + hæmolytic amboceptor.

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[1] See H. Noguchi. *Serum Diagnosis of Syphilis.* Philadelphia, 1911. — Rosanoff and Wiseman. *Syphilis and Insanity. A Study of the Blood and Cerebro-spinal Fluid.* Am. Journ. of Ins., Jan., 1910.

In the case of bacteria the mechanism of immunization is similar; accordingly, the essential ingredients in a reaction of specific bacteriolysis, constituting a *bacteriolytic system*, are:

bacteria + complement + bacteriolytic amboceptor.

It was shown by Bordet and Gengou that in any bacteriolytic reaction a definite proportion of complement is used up, and that the amount of complement thus "absorbed" or "fixed" may be used as a measure of the immunity reaction. So that if upon mixing in a test tube suspension of bacteria, complement, and bacteriolytic amboceptor we wish to determine whether bacteriolysis has taken place, we may do so simply by testing for the presence of complement: its absence would prove that it has been used up and that the immunity reaction has taken place, while its presence would prove that such reaction has not taken place.

The test for complement is done simply by adding blood corpuscles and hæmolytic amboceptor: in the presence of complement hæmolysis will occur, in its absence it will, of course, not occur.

The application of the phenomenon of fixation of complement with resulting inhibition of hæmolysis, known as the Bordet-Gengou phenomenon, in a test for syphilis is due to Wassermann.

In the case of syphilis the ingredients of the immunity reaction are:

syphilitic antigen[1] + complement + syphilitic amboceptor.

The actual test is performed in two stages. In the first stage syphilitic antigen, complement, and the serum to be tested are brought together: if the serum contains syphilitic amboceptor the reaction will take place and complement will, consequently, be used up; if the serum does not contain syphilitic amboceptor the reaction will not take place and complement will therefore remain free. The

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[1] *Antigen* is a general term applied to all bodies, such as bacteria, blood corpuscles, etc., which are capable of exciting the generation of specific antibodies. The *Spirochæte pallida* not having as yet been successfully cultivated on artificial media, Wassermann employed as syphilitic antigen watery extract of livers from congenitally syphilitic infants. It has since been found that certain lipoid substances which may be extracted from normal body tissues curiously enough possess, like true syphilitic antigen, the property of binding complement. Such lipoids are now frequently employed as "artificial syphilitic antigen."

second stage of the reaction consists simply in the addition of blood corpuscles and hæmolytic amboceptor to test for complement: in the case of a syphilitic serum, complement, having been used up in the first stage of the reaction, will not be available for the hæmolytic system and there will be no hæmolysis; in the case of a non-syphilitic serum, complement will remain free after the first stage of the test; it will therefore be available for the hæmolytic system, and hæmolysis will take place.

§ 2. Preparation of Reagents.

Complement is derived from fresh guinea pig serum, the following being the most convenient way. A full-grown guinea pig is held by an assistant over a large Petri dish in a hyperextended position by grasping the head with one hand and all the four legs with the other. A long slender sharp knife is introduced into the neck at the side just in front of the vertebral column until it is thrust through on the other side, when the edge of the blade is turned ventrally and all the tissues in the front part of the neck are cut through. The blood is caught in the Petri dish, which is then covered and set aside in a corner out of direct sunlight and allowed to stand at room temperature for about two hours, at the end of which time the serum may be poured off and used; or the Petri dish may at the end of two hours be placed in the refrigerator where it may be kept overnight and used on the following morning; but standing overnight at room temperature renders the serum inactive. If kept on ice the activity of the serum is reduced much more slowly, so that it usually remains good for about forty-eight hours.

The serum thus obtained is prepared for use by diluting it with 1.5 parts of 0.9% salt solution. In performing the test 0.1 c.c. of this diluted serum (representing 0.04 c.c. of the pure serum) is used. Guinea-pig serum is very rich in complement, so that the amount used in the test is really in excess of that actually required for complete hæmolysis.

Suspension of human blood corpuscles is prepared by allowing blood from a puncture in the lobe of the ear or the tip of the finger to run into 0.9% salt solution in the proportion of one drop to 4 c.c. (about 1%). This is placed in the refrigerator and shaken repeatedly during the first four or five hours to break up the coagulum, which is apt to form in the shape of a thin, jelly-like, more or less coherent mass, enclosing many of the corpuscles. The corpuscles are then allowed to settle, the supernatant fluid is poured off, and an equal

volume of fresh salt solution is added. The suspension is made uniform by shaking again and is now ready for use. With the aid of a centrifuge the suspension can be prepared much more quickly,—in a few minutes. In the test 1 c.c. of this suspension is used.

It is important that the blood for the suspension be obtained from a person who is free from syphilis, or all the tubes, including the negative control, may give a positive reaction. To be certain on this point it is best to take the blood from a person whose serum has been examined for the Wassermann reaction and found to be negative.

Anti-human hæmolytic amboceptor. This reagent may be derived conveniently from the blood serum of a rabbit which has been immunized to human corpuscles by a series of five or six intraperitoneal injections, given at intervals of four days, starting with 5 c.c. and increasing gradually to 20 c.c. The blood for this purpose may be obtained from any healthy human subject by means of a suitable hollow needle, selecting for puncture one of the large superficial veins of the arm. The corpuscles used for injection into the rabbit must be freed from serum by thorough washing in large amounts of 0.9% salt solution, repeated at least three times. The suspension should be made to contain about the same proportion of corpuscles as the blood itself. Ten or twelve days after the last injection the rabbit is bled and the blood allowed to coagulate at room temperature for five or six hours and then placed in the refrigerator. From time to time for three or four days, as the clot gradually contracts, the serum which is separated is removed. Sheets of ordinary white filter paper of good quality are then saturated with the rabbit serum and spread out to dry on a sheet of clean unbleached muslin. The drying generally takes several hours. The impregnated sheets of filter paper are then accurately cut up into strips 0.5 cm. wide and standardized for their hæmolytic power.

The process of standardization is quite simple and is accomplished as follows: one puts into each of eight test tubes (1 cm. in diameter, 10 cm. in length) arranged in a row in a suitable rack, 1 c.c. of human blood corpuscle suspension, prepared as described above, and 0.1 c.c. of diluted guinea pig serum, also prepared as described above; one then adds to the test tubes amboceptor paper cut off from the prepared strips in carefully measured lengths gradually increasing from a length of 1 mm. for the first test tube to that of 8 mm. for the eighth test tube in the series. The test tubes are then well shaken and placed in the incubator for two hours, during which time they are repeatedly taken out and shaken, — at first every five minutes.

At the end of two hours the test tubes are inspected: the shortest length of amboceptor paper sufficient to effect complete hæmolysis contains *one amboceptor unit.* In performing the test double that length of test paper is used, that is to say, two amboceptor units.

Amboceptor paper thus prepared and protected from moisture and from direct sunlight will keep for many months.

Artificial syphilitic antigen may be prepared by steeping thoroughly mashed beef liver or kidney tissue in ten times its volume of absolute alcohol at 37° C. for seven days, filtering, and evaporating the filtrate with the aid of an electric fan to the consistency of a thick, sticky mass; this mass is dissolved in a small quantity of ether, the solution is filtered, and to the filtrate is added five times its volume of acetone; the precipitate which is thrown down immediately is allowed to settle and is taken up after the supernatant fluid has been decanted. Antigen thus derived may be prepared for use either in liquid form or in the form of impregnated strips of filter paper.

For use in liquid form 0.2 gram of the acetone-insoluble precipitate is dissolved in 5 c.c. of ether, 100 c.c. of 0.9% salt solution is gradually added, the mixture well shaken and the resulting emulsion filtered through paper to remove flocculi or solid particles.

For use in the form of impregnated strips 0.4 gram of the precipitate is dissolved in 20 c.c. of ether; ten sheets of filter paper 10 cm. square laid upon one another in a clean glass dish are then evenly impregnated with the solution with the aid of a pipette, quickly separated, and spread out to dry upon a clean sheet of unbleached muslin. When dry the impregnated sheets of filter paper are accurately cut up into strips 0.5 cm. wide.

Antigen thus prepared possesses, on the one hand, true *antigenic power*, that is to say, the power of binding complement in the presence of syphilitic antibody and thus inhibiting hæmolysis, and, on the other hand, generally in a lesser degree, an *anti-complementary power*, that is to say, a power of destroying complement and thus inhibiting hæmolysis independently of syphilitic antibody. It must therefore be standardized with a view to determining the proper dosage to be used in tests to insure ample antigenic action and to exclude simple anti-complementary action. For this purpose a titration is carried out in the following manner: twenty small test tubes are arranged in two rows in a suitable rack; one puts into each test tube 1 c.c. of human blood corpuscle suspension and 0.1 c.c. of diluted guinea pig serum, both reagents prepared as described

above; to each of the tubes in the *front* row one adds also one drop of serum from a syphilitic subject, known to give a positive reaction; one adds finally to the test tubes in either row antigen solution in gradually increasing amounts from 0.01 c.c. for the first test tube to 0.4 c.c. for the tenth test tube, or, if the antigen is in the form of test papers, in lengths gradually increasing from 1 mm. for the first test tube to 40 mm. for the last test tube in each row. The test tubes are then placed in the incubator for one hour, at the end of which time two units of amboceptor are added to each tube in both rows and the test tubes are again placed in the incubator and the reading taken at the end of two hours. The results may be illustrated by the following table, which represents a sample titration.

Amount of Antigen.		Front Row of Tubes.	Back Row of Tubes.
In Form of Emulsion.	In Form of Test Papers.	Inhibition of Hæmolysis Due to True Antigenic Action.	Inhibition of Hæmolysis Due to Simple Anti-complementary Action.
0.01 c.c.	1 mm.	Complete hæmolysis.	Complete hæmolysis.
0.02 c.c.	2 mm.	" "	" "
0.03 c.c.	3 mm.	Partial inhibition.	" "
0.04 c.c.	4 mm.	Complete inhibition.	" "
0.05 c.c.	5 mm.	" "	" "
0.07 c.c.	7 mm.	" "	" "
0.1 c.c.	10 mm.	" "	" "
0.2 c.c.	20 mm.	" "	Partial inhibition.
0.3 c.c.	30 mm.	" "	Complete inhibition.
0.4 c.c.	40 mm.	" "	" "

The proper dosage of a specimen of antigen, giving on titration results like those represented in the above table, would be, for the liquid form, 0.06 c.c., and for the test-paper form a length of 6 mm.

It happens sometimes that a specimen of antigen is found on titration to possess either too feeble an antigenic power or too strong an anti-complementary power; in either case it cannot be used and another lot must be prepared.

Antigen in the form of the mass derived by precipitation through the addition of acetone will keep in good condition for many months, especially if stored in the refrigerator in a well-stoppered wide-necked bottle. But even in the form of the emulsion or test papers

it will keep for two or three months or longer; after that time it is apt to develop strong anti-complementary power and can no longer be safely used.

§ 3. Collecting Specimens for Examination.

One of the advantages of Noguchi's method lies in the fact that much smaller quantities of blood are required for the test than in the original method of Wassermann. Generally 1 c.c. of blood is sufficient; such an amount can be readily obtained from the lobe of the ear. The ear is first made warm and hyperæmic by gentle rubbing; it is then cleansed with alcohol, and a puncture is made with the point of a *sharp* knife (which is better than either a needle or a blood lance) in the edge of the most dependent portion of the lobe; the blood is then collected in a tube of the size and shape shown in the illustration. If the blood shows a tendency to stop flowing it can

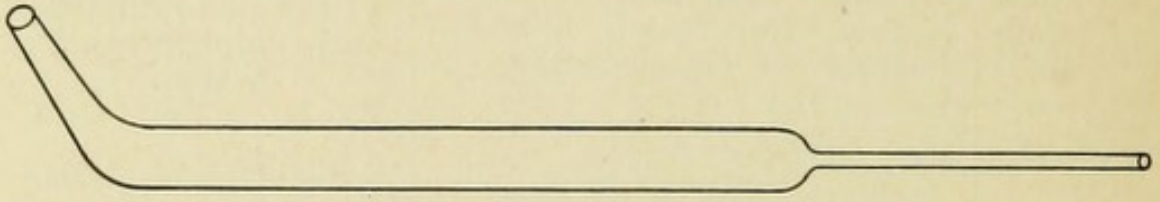


FIG. 14. BLOOD-COLLECTING TUBE.

be started again by thoroughly clearing the puncture wound of the clot which is forming in it. When the tube is nearly full the larger end is sealed with sealing wax and the capillary end is sealed by being held in the flame of an alcohol lamp. In an hour or two the serum separates and can be taken out by means of a capillary pipette after cracking open the blood tube with the aid of a sharp file. Blood-collecting tubes and capillary pipettes can be easily made from ordinary glass tubing of suitable size.

Cerebro-spinal fluid is obtained by lumbar puncture. The technique of this procedure has been described elsewhere (see p. 287).

Both the blood serum and the cerebro-spinal fluid should be examined as soon as possible after they have been obtained. After a day or two, if kept at room temperature, or after about four days, if kept in the refrigerator, the specimens will usually be found to have undergone changes which render them unsuitable for the test; most commonly they develop a non-specific anti-complementary power which causes inhibition of hæmolysis both in the reaction tube and in the control tube.

§ 4. Technique of the Reaction.

A whole rackful of specimens may be examined together. It is most convenient to use a test-tube rack with spaces for two rows of test tubes. Tubes 10 cm. long and 1 cm. in diameter are best for the purpose. For testing each specimen two tubes are used, a front tube for the reaction and a rear tube for control. One drop (0.02 c.c.) of serum is put in a front tube and the same amount in a corresponding rear tube. In the case of cerebro-spinal fluid 0.2 c.c. in each tube is the proper amount to be used. At one end of the rack two pairs of tubes are reserved respectively for the positive and negative controls: in the positive control tubes serum or cerebro-spinal fluid known to give a positive reaction is used; in the negative control tubes neither serum nor spinal fluid is used. Now the proper dose of antigen (either in liquid or in test-paper form), as determined by standardization, is put into each of the *front* row of tubes; 0.1 c.c. of diluted guinea pig serum is added to each tube in either row; finally 1 c.c. of the blood corpuscle suspension is added to all the tubes, which are then well shaken and placed in the incubator for one hour. The rack with the tubes is now taken out and the proper length of hæmolytic amboceptor test paper is added to each tube in either row. The tubes are again thoroughly shaken and returned to the incubator for two hours longer, during which time they are frequently taken out and shaken, and at the end of which time the readings may be taken. The positive and negative control sets are inspected first, and if these are found to be all right the readings in the other tubes may be taken and recorded. The rear tubes, containing no antigen, should in every case show complete hæmolysis; if any rear tube shows inhibition of hæmolysis it is probably due to non-specific anti-complementary power in the specimen of serum or cerebro-spinal fluid, as the case may be, and any inhibition of hæmolysis in the front tube in such a case, being attributable to the same cause, is, therefore, inconclusive. If the rear tubes show complete hæmolysis, inhibition of hæmolysis in any front tube indicates a positive reaction, partial hæmolysis indicates a slight or doubtful reaction, and complete hæmolysis indicates a negative reaction.]

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